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70790

Requester's Full Name: PING LEE Examiner #: ~~P Tao~~ Date: 9/14/04
Art Unit: 2699 Phone Number 305-4865 Serial Number: 09/261,913
Location: CPK2-8Y13 Results Format Preferred (circle): PAPER DISK E-MAIL

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Acoustic Echo Cancellation System

Inventors (please provide full names): Murtaza Ali

Earliest Priority Filing Date: 12/16/99

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Using allpass (all-pass) filter (or delay) to decorrelate the multiple inputs of the echo canceller. The broadest claim is claim 10. The parameter of the allpass (or delay) filter is a random variable. Random variable means it has a probability distribution (or density) function. Shorten as PDF.

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Date Completed: 09/17 / 10:00
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Type of Search

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1 **Stereophonic acoustic echo cancellation system using time-varying all-pass filtering for signal decorrelation**
Ali, M.;
Acoustics, Speech, and Signal Processing, 1998. ICASSP '98. Proceedings of the 1998 IEEE International Conference on , Volume: 6 , 12-15 May 1998
Pages:3689 - 3692 vol.6

[Abstract] [PDF Full-Text (344 KB)] **IEEE CNF**

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STEREOPHONIC ACOUSTIC ECHO CANCELLATION SYSTEM USING TIME-VARYING ALL-PASS FILTERING FOR SIGNAL DECORRELATION

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ABSTRACT

This paper describes a novel technique for decorrelating the stereo signals in stereophonic acoustic echo cancellation (AEC) systems. At present, most teleconferencing systems use a single full-duplex audio channel for voice communications. However, in order to introduce spatial realism, future teleconferencing systems are expected to have more than one channel (at least stereo with two channels). However, in stereophonic AEC systems, the correlation between the stereo signals does not allow correct identification of the echo path responses. In this paper, we develop a signal decorrelation technique based on time-varying all-pass filtering of the individual stereo signals. Experiments show that this technique does not effect the perception of the stereo signals, but identifies the echo path responses correctly.

1. INTRODUCTION

At present, most teleconferencing systems use a single full-duplex audio channel for voice communications. These systems also make use of an acoustic echo canceller to reduce the undesired echo resulting from the coupling between the loudspeaker and the microphone. To make these systems more lifelike, better and more realistic sound systems are required. High fidelity wide bandwidth (100 to 7000 Hz) voice communication system is now being used. However, in order to introduce spatial realism, more than one channel are needed. Therefore, future teleconferencing systems are expected to have more than one channel (at least stereo with two channels) of full duplex voice communications.

One of the fundamental problem in stereophonic acoustic echo cancellation (AEC) systems is that given the input to the loudspeakers and the output of the microphones in the receiving room, the echo path cannot be determined uniquely [2]-[5]. The problem is due to the correlation between the stereo signals. As a result, any adaptive technique used in stereophonic AEC systems fails to identify the echo path responses correctly. To circumvent this problem, it is necessary to develop techniques to decorrelate the stereo signals at the input to the loudspeakers without affecting stereo perception.

Several techniques have been proposed in the past, e.g., addition of random noise, modulation of signal, decorrelation filters, inter-channel frequency shifting etc. [4] [5]. However, these techniques either do not decorrelate the signals or destroy stereo perception completely. The interleaving comb filtering proposed in [5] only gives partial identification (above 1 kHz) of the echo path responses. Recently, a technique is proposed in [2] based on non-linear processing of the stereo signals. However, as noted by the authors of [2], for tonal signal, the technique based on non-linearity cannot maintain transparency in perception (changes the pitch perception).

In this paper, we propose a different solution based on time-varying all-pass filtering of the stereo signals. The amount of time-variation allowed is restricted using the psychoacoustic data known as "the just noticeable inter-aural delay" [6] to maintain spatial perception. Our experiments show that this technique decorrelates the signals enough to allow identification of the true echo path responses, while maintaining transparency for speech signals. For a single tone, it introduces small background noise but maintains pitch perception. Since, audio/video conferencing rooms usually have inherent background noise, and noise suppression techniques are usually used in such systems, our technique is well-suited for such applications.

This paper is organized as follows. Section 2 provides a brief description of a stereophonic teleconferencing system and the associated problem with stereophonic AEC. In Section 3, we describe our new technique for signal decorrelation. Finally, in Section 4, we present experimental evaluation of our proposed technique.

2. STEREOPHONIC ACOUSTIC ECHO CANCELLATION

Fig. 1 shows the configuration of a typical stereophonic echo cancellation system. The transmission room (depicted on the left) has two microphones that pick up the speech signal, x, via the two acoustic paths characterized by the impulse responses, g_1 and g_2. All acoustic paths are assumed to include the microphone and/or loudspeaker responses. The i^{th} microphone output is then given by (in the frequency domain)

$$X_i(\omega) = G_i(\omega)X(\omega). \quad (1)$$

In this paper, the upper-case letters represent the Fourier transforms of the time-domain signals denoted by the corresponding lower-case letters. The whole system is considered as a discrete-time system ignoring any A/D or D/A converter. These signals are presented through the set of loudspeakers in the receiving room (on the right in Fig. 1). Each microphone picks up an echo from each of the loudspeakers. Let h_{ij} be the acoustic path impulse response from the j^{th} loudspeaker to the i^{th} microphone. Then the echos picked up by the microphones in the receiving room are

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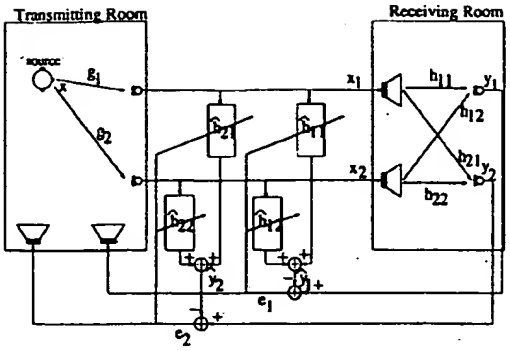

Figure 1: Configuration of stereophonic echo cancellation systems

given by (in the frequency domain)

$$Y_i(\omega) = \sum_j H_{ij}(\omega)X_j(\omega). \quad (2)$$

In the absence of any AEC, the echos y_i's will be passed back to the loudspeaker in the transmission room and will be recirculated again and again. This will cause multiple echos or may even result in howling instability [5]. Commonly used AEC systems use adaptive finite impulse response (FIR) filters that provide estimates of the echo path responses. The FIR filter coefficients are updated adaptively depending on the input signals to the loudspeaker and the outputs of the microphones.

In the stereophonic AEC, there are four echo paths to be identified. We, therefore, need four adaptive filters as shown in Fig. 1. The output of the AEC filters (which can be thought of as an estimated echo) are as follows

$$\hat{Y}_i(\omega) = \sum_j \hat{H}_{ij}(\omega)X_j(\omega).$$

These estimated echos are subtracted from the true echos giving the error signals,

$$E_i(\omega) = Y_i(\omega) - \hat{Y}_i(\omega).$$

These error signals are used to update the filter coefficients. Several techniques are available to calculate the filter updates (e.g., the least means square (LMS), the recursive least square (RLS), the affine projection (AP) algorithms, etc.). All these techniques attempt to minimize these error signals in one way or another.

2.1. The problem of non-uniqueness of solutions

The data available to the echo canceller are the inputs to the loudspeakers, x_i's, as well as the outputs of the microphones, y_i's, in the receiving room. The fundamental problem of stereophonic AEC systems is that given this set of data, it is not possible to uniquely determine the echo paths to drive the error, e_i's to zero (i.e., to eliminate the echos). In order to explain this, let us look at the error in one of the channels (similar analysis can be carried out for the other channels). In the frequency domain, this error is given by

$$E_1(\omega) = \sum_j \left(H_{1j}(\omega) - \hat{H}_{1j}(\omega)\right) G_j(\omega)X(\omega).$$

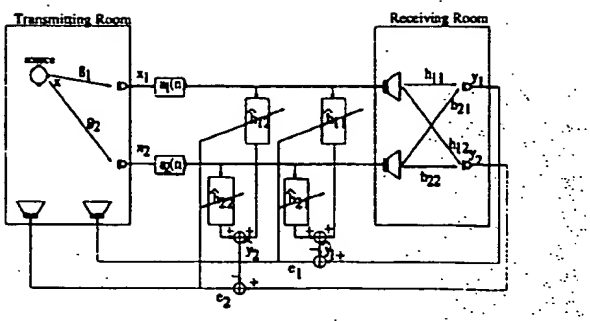

Figure 2: Configuration of the modified stereophonic echo cancellation systems

Let us assume that somehow, we have been able to achieve perfect echo cancellation, i.e., we have $E_1(\omega) = 0$. Assuming that $X(\omega)$ does not have zeros in the frequencies of interest, the above gives

$$\sum_j \left(H_{1j}(\omega) - \hat{H}_{1j}(\omega)\right) G_j(\omega) = 0. \quad (3)$$

This equation does not imply $H_{1j}(\omega) = \hat{H}_{1j}(\omega)$. Therefore, even if the echo has been driven to zero, we have not necessarily achieved perfect alignment. In other words, the canceller has not necessarily identified the true echo path. In fact, the above equation has infinitely many solutions for $\hat{H}_{1j}(\omega)$. Any adaptation algorithm may lead to any one of these solutions. Note that so long as the conditions in both the transmitting and the receiving rooms are fixed, this does not cause any problem as the echo will remain zero. However, the adaptation technique has to track not only the changes in the receiving room that change the echo path responses, h_{ij}, but also the changes in the conditions in the transmitting room as reflected through changes in g_i. Tracking the conditions in the transmitting room can be specially problematic as g_i may change abruptly and by a large amount (e.g., one speaker stops talking and another speaker starts speaking from a different location).

A detailed discussion of this problem describing several viewpoints can be found in [2]-[5]. Specially, the discussion in [2] provides a better understanding of the above problem both in terms of non-uniqueness and misalignment of the solutions.

3. SIGNAL DECORRELATION

As discussed in Section 2, the reason for non-perfect alignment is that the two signals are correlated due to (1). Thus, in order to solve the problem, we have to find a technique to decorrelate the input signals to the loudspeakers, x_i, in such a way that it does not affect the stereo perception in the receiving room.

The proposed system for the stereophonic echo cancellation system is shown in Fig. 2. Each of the stereo signals is passed through a different all-pass filter denoted by $a_i(n)$. The subscript n is used to indicate that the all-pass filter is time-varying (varying with n).

Rigorously speaking, there is no frequency domain representation of the time-varying filtering operation used in Fig. 2. However, if we assume that $a_i(n)$ does not change much for a given window around time instant n, then it is possible to assign a frequency domain transfer function $A(\omega, n)$ to the filtering operation

at time instant n. Then the frequency spectra of the output at time instant n can be formally written as

$$Y_i(\omega,n) = \sum_j H_{ij}(\omega)A_j(\omega,n)X_j(\omega).$$

$$\hat{Y}_i(\omega,n) = \sum_j \hat{H}_{ij}(\omega)A_j(\omega,n)X_j(\omega).$$

Then the error in the i^{th} path is

$$E_i(\omega,n) = \sum_j \left(H_{ij}(\omega) - \hat{H}_{ij}(\omega)\right) A_j(\omega,n)G_j(\omega)X(\omega).$$

Now, if we can achieve perfect echo cancellation by setting $E_i(\omega,n) = 0$, then the above implies

$$\sum_j \left(H_{ij}(\omega) - \hat{H}_{ij}(\omega)\right) A_j(\omega,n)G_j(\omega)X(\omega) = 0.$$

Since the above must be true for all n, i.e., for all variations of $A_j(\omega,n)$ with n, we must have $H_{ij}(\omega) = \hat{H}_{ij}(\omega)$. Thus by using the time varying all-pass filter in the signal path, it is possible to achieve perfect alignment between the adaptive filter and the true echo path. In practice, perfect alignment is not possible due to the finite impulse response of the modeling filters (the adaptive filters) as well as due to the noise present in the signal. However, simulations show that this technique achieves much better identification of the echo paths than was otherwise possible (see section 4).

3.1. Time-varying all pass filter

The system described above, however, must follow certain constraints. First, The signals that are modified through the all-pass filters are played back through the loudspeaker in the receiving room. Therefore, the time-variation of the all-pass filters has to be chosen in such a way that does not alter the stereo perception of the speech. Second, since an adaptive filter will be used to identify the echo path responses, the time-variation of the all-pass filters should be fast enough so that the adaptive technique used cannot track the changes in the all-pass filters. On the other hand, we would like the adaptive technique to be able to track changes in the receiving room. These conflicting requirements show the importance of proper choice of the time-varying all-pass filters. In the following, we discuss one possible choice.

The simplest all-pass filter is a single-order filter that can be described by a single parameter $\alpha_i(n)$. The frequency response of such a system for a given n can be written as

$$A_i(\omega,n) = \frac{e^{-j\omega} - \alpha_i(n)}{1 - \alpha_i(n)e^{-j\omega}}$$

Such a filter has several important features, namely

- $|A_i(\omega,n)| = 1.0, \forall\omega$ and $\forall n$, i.e., this filter passes all frequencies all the time unattenuated.
- It only changes the phase of each frequency.
- It is completely determined by a single time-varying parameter $\alpha_i(n)$. Thus, the design of the system involves proper choice of $\alpha_i(n)$.

3.2. Choice of $\alpha_i(n)$

In order for the all-pass filter $a_i(n)$ to be stable, the absolute value of $\alpha_i(n)$ must be less than unity. Since, all our signal is real, we have also restricted $\alpha_i(n)$ to be a real value. This also simplifies the filtering operation. $\alpha_i(n)$ is a time-varying parameter. Thus, we need to update $\alpha_i(n)$ at every time instant. The update rule for $\alpha_i(n)$ is as follows

$$\begin{aligned} \alpha_i(n+1) &= \alpha_i(n) + r_i(n), \\ \text{set } \alpha_i(n+1) &= \alpha_{i,max} \text{ if } \alpha_i(n+1) > \alpha_{i,max} \\ \text{set } \alpha_i(n+1) &= \alpha_{i,min} \text{ if } \alpha_i(n+1) < \alpha_{i,min}. \end{aligned} \quad (4)$$

Here, $r_i(n)$ is an independent and identically distributed (iid) random variable having a uniform probability distribution function (pdf) over the interval $[-R_i, R_i]$. R_i indicates the maximum allowable deviation of $\alpha_i(n)$ from one instant to another. This deviation corresponds to phase jitter introduced by the time-varying all-pass filter for the i^{th} channel. R_i should be made as large as possible to introduce enough signal decorrelation. However, Too large a value of R_i will result in noticeable change in speech perception.

$\alpha_{i,max}$ and $\alpha_{i,min}$ in (4), represent the the maximum and minimum allowable values of $\alpha_i(n)$. In order to ensure stability, we must have $\alpha_{i,max} < 1$ and $\alpha_{i,min} > -1$. Further restrictions are also required to maintain transparency in speech perception. These restrictions are derived from the data known as "just noticeable inter-aural delay" in psychoacoustics [6]. This data represents the minimum change in the inter-aural time delay between the two ears at a given frequency that causes a noticeable change in the perception of the direction of sound. The all-pass filter changes the phase of each frequency of the input speech. The effect of this phase change is to change the time of arrival of the signal at each frequency at the ears. So, if we limit the phase changes so that the change in the time of arrival for each channel is within the just noticeable inter-aural delay, then spatial perception of stereo signal will not be affected. The just noticeable inter-aural delay varies between 30 μsec. to 200 μsec [6]. We have chosen to limit the change in the time of arrival of each frequency within 60 μsec. This leads to the following values of $\alpha_{i,max}$ and $\alpha_{i,min}$,

$$\begin{aligned} \alpha_{i,max} &= 0 \text{ and} \\ \alpha_{i,min} &= -0.9 \text{ and} \end{aligned}$$

Fig. 3 shows the time delay as function of frequency for the two all-pass filters with $\alpha_{i,min} = -0.9$ and $\alpha_{i,max} = 0$. Since, the value of $\alpha_{i,min}$ for the all-pass filters in the two stereo paths are kept within these limits, the resulting inter-aural delay are also within 60 μsec. Our experiments have shown that this choice leads to good signal decorrelation to allow correct identification of echo path responses and also keeps the stereo perception of speech unchanged.

4. EXPERIMENTAL EVALUATION

In order to evaluate the technique, we collected stereo speech samples in our audio laboratory. The audio laboratory was used as the transmitting room. We had two speakers talking alternately in the room when two microphones were used to collect the data. The data were sampled at 16 kHz sampling rate. In one set of data, the speakers were asked to stand still while talking. This was made

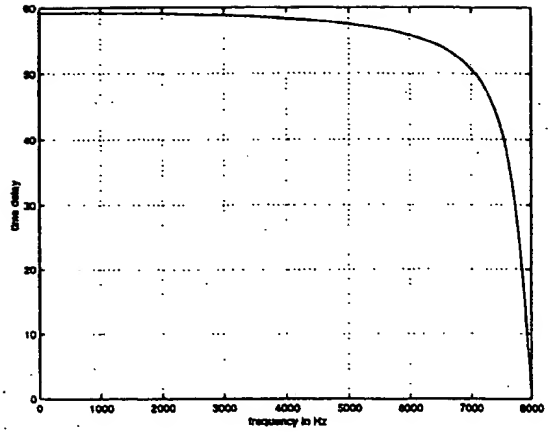

Figure 3: Time-delay vs frequency for the two all-pass filters with $\alpha_{i,min} = -0.9$ and $\alpha_{i,max} = 0$

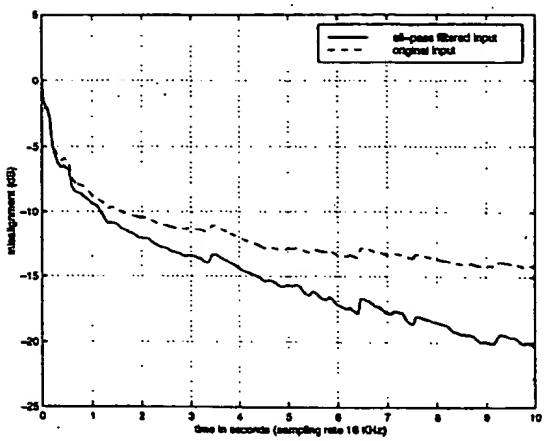

Figure 4: Behavior of misalignment with original stereo signal and with stereo signal modified using time-varying all-pass filtering

to ensure that the echo path responses remain the same. In another set, they were free to move around the room as they talked into the microphones. We then used our technique to decorrelate the collected stereo signals. We performed informal listening tests by playing the original and the modified stereo signals over both loudspeakers and headphones. All these tests show that the stereo perception of the modified signal is indistinguishable from that of the original.

We simulated the receiving room loudspeaker outputs by convolving the stereo signals using the echo path responses h_{11} and h_{12}. These two echo path responses were obtained using the image method of [1] based on room measurements of one of our conference rooms. The microphone output in the receiving room was simulated by summing up the outputs of these two convolutions. In the above convolutions, we restricted the lengths of the echo path responses to be $N = 4096$ samples long. We then used the two adaptive filters $\hat{h}_{11}$ and $\hat{h}_{12}$ each of length $L = 2048$ samples, to identify these echo path responses. We used the fast affine projection technique of order 8 for updating the filter coefficients [4]. Fig. 4 shows the misalignment in dB with time. The misalignment is defined as

$$10 * log_{10} \frac{\|h_{11,1:2048} - \hat{h}_{11}\|_2^2 + \|h_{12,1:2048} - \hat{h}_{12}\|_2^2}{\|h_{11,1:2048}\|_2^2 + \|h_{12,1:2048}\|_2^2}$$

where, the subscript $1:2048$ is used to indicate that the first 2048 samples of the corresponding echo path responses have been used here. This figure corresponds to the set of data when the transmitting room echo path responses were kept fixed as already described. The dotted line corresponds to the case of original signal and the solid line to the case of modified data using our technique of time-varying all pass filtering.

Since, we have used 'real-world' collected data for the transmitted signals, the situation was not as bad as when simulated data was used. We did not experience sudden jumps, but misalignment settles down at around -14 dB. whereas with our technique of signal decorrelation, the misalignment goes below -20 dB.

5. CONCLUSION

Future audio/video conferencing systems are expected to employ stereo audio communication. These systems require stereophonic AEC. This paper describes a new effective but simple technique to decorrelate the stereo signals so that correct identification of the stereophonic path responses is possible. The technique uses a time-varying single-pole all-pass filter in each channel. The time-varying filter parameter is chosen in such a way that it does not effect stereo speech perception but introduces enough decorrelation among the signals in different channels.

6. REFERENCES

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S3       3945   (ALL()PASS?? OR ALLPASS??)(3N)(FILTER??)
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S11         0   S6 AND S2
S12         3   RD S10 (unique items)
S13         3   S2 AND S5
S14        13   RD S8 (unique items)
S15        13   S14 NOT (S13 OR S7)
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7/3,K/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

11297784 Genuine Article#: 633AK No. References: 16
Title: Decompression and speckle detection for ultrasound images using the homodyned k-distribution
Author(s): Prager RW (REPRINT) ; Gee AH; Treece GM; Berman LH
Corporate Source: Univ Cambridge,Dept Engn,Trumpington St/Cambridge CB2 1PZ//England/ (REPRINT); Univ Cambridge,Dept Engn,Cambridge CB2 1PZ//England/; Univ Cambridge,Addenbrookes Hosp, Dept Radiol,Cambridge CB2 2QQ//England/
Journal: PATTERN RECOGNITION LETTERS, 2003, V24, N4-5 (FEB), P705-713
ISSN: 0167-8655 Publication date: 20030200
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Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

...Abstract: can be used for speckle detection and for measuring the distance between images by speckle **decorrelation** . However, this intensity **signal** is rarely available. **Many** researchers work with B-scan data which has been scan-converted and subject to nonlinear...
...Identifiers--FRACTIONAL ORDER MOMENTS; **ECHO** ENVELOPE; STATISTICS; DECORRELATION; **REDUCTION**; MODEL

7/3,K/2 (Item 1 from file: 94)
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04525116 JICST ACCESSION NUMBER: 00A0221042 FILE SEGMENT: JICST-E
A study of decorrelation on a stereo echo canceller .
SUZUKI KUNIYASU (1); SUGIYAMA KIYOSHI (1); SAKAUCHI SUMITAKA (2); SHIMAUCHI SUEHIRO (2); MAKINO SHOJI (2)
(1) Tokyo Inst. Polytechnics; (2) Nippon Telegraph and Telephone Corp. (NTT), Cyber Space Lab., JPN
Denshi Joho Tsushin Gakkai Gijutsu Kenkyu Hokoku(IEIC Technical Report (Institute of Electronics, Information and Communication Enginners), 1999, VOL.99,NO.518(EA99 83-87), PAGE.25-32, FIG.13, TBL.4, REF.7
JOURNAL NUMBER: S0532BBG
UNIVERSAL DECIMAL CLASSIFICATION: 534.8 621.37:534.85
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

A study of decorrelation on a stereo echo canceller .
ABSTRACT: A stereo **echo canceller** is required for a stereo teleconferencing system. The main problems are that the adaptive filters...
...or, if not, convergence speeds are very slow because of the cross-correlation between stereo **signals** . **Several** pre-processing methods which **decorrelate** stereo **signals** in order to overcome this problem have been proposed. But these methods introduce distortion resulting...

12/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC
(c) 2004 Institution of Electrical Engineers. All rts. reserv.

6069260 INSPEC Abstract Number: B9812-6450B-006
Title: Stereophonic acoustic echo cancellation **system using time-varying all-pass filtering for signal decorrelation**
Author(s): **Ali, M.**
Author Affiliation: Wireline Commun. Branch, Texas Instrum. Inc., Dallas, TX, USA
Conference Title: Proceedings of the 1998 IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP '98 (Cat. No.98CH36181) Part vol.6 p.3689-92 vol.6
Publisher: IEEE, New York, NY, USA
Publication Date: 1998 Country of Publication: USA 6 vol. lxiii+3816 pp.
ISBN: 0 7803 4428 6 Material Identity Number: XX98-01420
U.S. Copyright Clearance Center Code: 0 7803 4428 6/98/$10.00
Conference Title: Proceedings of the 1998 IEEE International Conference on Acoustics, Speech and Signal Processing
Conference Sponsor: IEEE Signal Process. Soc
Conference Date: 12-15 May 1998 Conference Location: Seattle, WA, USA
Language: English
Subfile: B

Title: Stereophonic acoustic echo cancellation **system using time-varying all-pass filtering for signal decorrelation**
Author(s): **Ali, M.**
Abstract: This paper describes a novel technique for decorrelating the stereo signals in stereophonic **acoustic echo cancellation** (AEC) systems. At present, most teleconferencing systems use a single full-duplex audio channel for...
Identifiers: stereophonic **acoustic echo cancellation** system...

12/3,K/2 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
(c) 2004 Elsevier Eng. Info. Inc. All rts. reserv.

06778696 E.I. No: EIP04138084943
Title: The use of professional development school for developing student-teachers' professional competencies
Author: **Ali, Mohammad**
Corporate Source: Indonesia University of Education, Bandung, Indonesia
Conference Title: Proceedings of the IASTED International Conference on Computers and Advanced Technology in Education
Conference Location: Rhodes, Greece Conference Date: 20030630-20030702
E.I. Conference No.: 62504
Source: Proceedings of the IASTED International Conference on Computers and Advanced Technology in Education 2003.
Publication Year: 2003
ISBN: 088986361X
Language: English

Author: **Ali, Mohammad**
Descriptors: Teaching; Students; Professional aspects; Data **reduction** ; Curricula; School buildings; **Feedback** ; Statistical methods

12/3,K/3 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01629368 ORDER NO: AAD98-22053
EFFECTS OF DELAY TIME ON ACTIVE CONTROLS (FEEDBACK LOOPS)
Author: **ALI, MOHAMMAD SALAHALDIN**
Degree: PH.D.
Year: 1998
Corporate Source/Institution: WORCESTER POLYTECHNIC INSTITUTE (0774)
Source: VOLUME 59/01-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 328. 221 PAGES

Author: **ALI, MOHAMMAD SALAHALDIN**

...given for a general case of two unequal delay time in the velocity and displacement **feedback** loops. The results may **reduce** to those for special cases where the delay time exists in only one of the...

13/3,K/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05778308 E.I. No: EIP01025506533
Title: Multiscale Bayesian rectification of data from linear steady-state and dynamic systems without accurate models
Author: Bakshi, Bhavik R.; Nounou, Mohamed N.; Goel, Prem K.; Shen, Xiaotong
Corporate Source: Ohio State Univ, Columbus, OH, USA
Source: Industrial and Engineering Chemistry Research v 40 n 1 Jan 2001. p 261-274
Publication Year: 2001
CODEN: IECRED ISSN: 0888-5885
Language: English

...Abstract: state model or without a model. This approach exploits the ability of wavelets to approximately **decorrelate many** autocorrelated stochastic processes and to extract deterministic features in a **signal** . The decorrelation ability results in wavelet coefficients at each scale that contain almost none of...
Descriptors: Measurement errors; Random processes; Mathematical models; Optimization; Random errors; Statistical tests; Maximum likelihood estimation; **Probability distributions**

13/3,K/2 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

05119373 E.I. No: EIP98094374303
Title: Proceedings of the 1998 8th IEEE Workshop on Neural Networks for Signal Processing VIII
Author: Niranjan, M. (Ed.); Wilson, E. (Ed.); Constantinides, T. (Ed.); Kung, S.Y. (Ed.)
Conference Title: Proceedings of the 1998 8th IEEE Workshop on Neural Networks for Signal Processing VIII
Conference Location: Cambridge, Engl Conference Date: 19980831-19980902
E.I. Conference No.: 48948
Source: Neural Networks for Signal Processing - Proceedings of the IEEE Workshop 1998. IEEE, Piscataway, NJ, USA. 596p
Publication Year: 1998
CODEN: 85QHAU
Language: English

Descriptors: Signal processing; Neural networks; Signal theory; Learning algorithms; Convergence of numerical methods; Computer simulation; **Probability distributions** ; Statistical methods; Random processes; Convolution
Identifiers: KuicNet algorithms; Blind convolution tasks; Blind separation of **signals** (BSS); Independent component analysis (ICA); **Multiple decorrelations** ; Bayesian blind marginal separation method; Convolutively mixed discrete sources; Principal component analysis (PCA); Variable step...

13/3,K/3 (Item 1 from file: 144)

14132935 PASCAL No.: 99-0329121

A coding theorem for multiple-access decorrelating channels

1998 IEEE international symposium on information theory : Cambridge MA, 16-21 August 1998

MEDARD M
MIT Lincoln Laboratory, Lexington, MA 02173, United States

IEEE. Information Theory Society, United States.
IEEE international symposium on information theory (Cambridge MA USA) 1998-08-16
1998 p. 215
Publisher: IEEE, Piscataway NJ
Language: English

We determine a strong coding theorem for **decorrelating multiple** -access channels without finite memory on past **inputs** and outputs but with finite memory on inputs only. We use an interlaved code argument...

English Descriptors: Information theory; Multiple access; Coding; Error probability; Upper bound; Maximum likelihood decoding; Probability **density function** ; Block code; Channel capacity; Decorrelation; Code length

15/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6910422 INSPEC Abstract Number: B2001-06-6140-012
Title: Multipath delay **estimation using a superresolution PN-correlation method**
Author(s): Bouchereau, F.; Brady, D.; Lanzl, C.
Author Affiliation: Dept. of Electr. & Comput. Eng., Northeastern Univ., Boston, MA, USA
Journal: IEEE Transactions on Signal Processing vol.49, no.5 p. 938-49
Publisher: IEEE,
Publication Date: May 2001 Country of Publication: USA
CODEN: ITPRED ISSN: 1053-587X
SICI: 1053-587X(200105)49:5L.938:MDEU;1-G
Material Identity Number: O649-2001-005
U.S. Copyright Clearance Center Code: 1053-587X/2001/$10.00
Language: English
Subfile: B

Title: Multipath delay **estimation using a superresolution PN-correlation method**
Abstract: This paper addresses the problem of high-resolution estimation of a multipath channel **delay** profile. We propose several improvements to the so-called superresolution pseudo-noise sequence correlation method (SPM) and analyze its performance on time-varying channels. SPM is based on the **multiple signal** classification (MUSIC) algorithm, which requires **decorrelation** of the multipath echoes. The proposed improvements enable SPM-based **delay** estimation in the presence of narrowband interference, and they reduce the necessary transmission window while...
...Descriptors: **delay** estimation
Identifiers: multipath **delay** estimation...

...multipath channel **delay** profile...

15/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

6532788 INSPEC Abstract Number: B2000-04-6140B-068
Title: Signal separation using fractional sampling in multiuser communications
Author(s): Brandt-Pearce, M.
Author Affiliation: Dept. of Electr. Eng., Virginia Univ., Charlottesville, VA, USA
Journal: IEEE Transactions on Communications vol.48, no.2 p.242-51
Publisher: IEEE,
Publication Date: Feb. 2000 Country of Publication: USA
CODEN: IECMBT ISSN: 0090-6778
SICI: 0090-6778(200002)48:2L.242:SSUF;1-X
Material Identity Number: I203-2000-003
U.S. Copyright Clearance Center Code: 0090-6778/2000/$10.00
Language: English
Subfile: B

...Abstract: a decorrelating filter that separates signals in a multiuser environment by relying on the relative **delays** to be sufficiently distinct. The input signal is fractionally sampled to allow for the differentiation of the user **delays** . Both zero-forcing and minimum mean-square-error versions of this filter are derived and...

...unknown digital signals by using the known received pulse shapes and the symbol rate. A **delay** -division **multiple** -access (DDMA) scheme based on this **signal** **decorrelator** is proposed that will allow signals to be transmitted without spreading the signal spectrum. It...

... systems and is similar to other bandwidth efficient schemes. The performance of a code-division **multiple** -access (CDMA) system using this **signal** **decorrelator** is also given. The **decorrelator** can be used as a blind multiuser detector or as a preprocessor to enhance the...
...Descriptors: **delays** ;
...Identifiers: user **delays** ; ...

... **delay** -division multiple-access

15/3,K/3 **(Item 3 from file: 2)**
DIALOG(R)File 2:INSPEC

6445956 INSPEC Abstract Number: B2000-02-6250F-018
Title: Analysis of decorrelator-based receivers for multirate DS/CDMA communications
Author(s): Jiangxin Chen; Mitra, U.
Author Affiliation: Dept. of Electr. Eng., Ohio State Univ., Columbus, OH, USA
Journal: IEEE Transactions on Vehicular Technology vol.48, no.6 p. 1966-83
Publisher: IEEE,
Publication Date: Nov. 1999 Country of Publication: USA
CODEN: ITVTAB ISSN: 0018-9545
SICI: 0018-9545(199911)48:6L.1966:ADBR;1-M
Material Identity Number: I112-1999-006
U.S. Copyright Clearance Center Code: 0018-9545/99/$10.00
Language: English
Subfile: B

...Abstract: a high-rate user's data by a soft-decoding rule from the outputs of **several** **decorrelators** sliding along the received **signal** sequence. The results show that it performs better than the HRD while maintaining smaller demodulation **delay** and computational complexity than the LRD. To further exploit the characteristics of multirate systems, a...

... its asymptotic multiuser efficiency is analyzed. It is shown that this detector incurs little demodulation **delay** for high-rate users and provides better performance for low-rate users than that of...
...Descriptors: **delays** ;
...Identifiers: demodulation **delay** ;

15/3,K/4 **(Item 4 from file: 2)**

DIALOG(R)File 2:INSPEC

5826399 INSPEC Abstract Number: A9806-8760B-021, B9803-7510B-135, C9803-7330-127
Title: Multiresolution imaging in elastography
Author(s): Varghese, T.; Bilgen, M.; Ophir, J.
Author Affiliation: Dept. of Radiol., Texas Univ. Med. Sch., Houston, TX, USA
Journal: IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control vol.45, no.1 p.65-75
Publisher: IEEE,
Publication Date: Jan. 1998 Country of Publication: USA
CODEN: ITUCER ISSN: 0885-3010
SICI: 0885-3010(199801)45:1L.65:MIE;1-X
Material Identity Number: J776-98001
U.S. Copyright Clearance Center Code: 0885-3010/98/$10.00
Language: English
Subfile: A B C

...Abstract: output images. Such a measure was previously formulated for systems employing cross-correlation based time- **delay** estimators through the strain filter. While the strain filter predicts the signal-to-noise ratio...

... noise. In this work, the strain filter is modified to study the strain noise at **multiple** resolutions. The effects of finite window length on **signal** **decorrelation** and on the variance of the strain estimator are investigated. Long-duration windows are preferred...

15/3,K/5 (Item 5 from file: 2)
DIALOG(R)File 2:INSPEC

5773118 INSPEC Abstract Number: B9801-6250-029
Title: Further results for multi-rate decorrelators for synchronous DS/CDMA systems
Author(s): Chen, J.; Mitra, U.
Author Affiliation: Dept. of Electr. Eng., Ohio State Univ., Columbus, OH, USA
Conference Title: Proceedings. Thirty-Fourth Annual Allerton Conference on Communication, Control, and Computing p.170-9
Publisher: Univ. Illinois, Urbana, IL, USA
Publication Date: 1996 Country of Publication: USA ix+1020 pp.
Material Identity Number: XX97-00487
Conference Title: Proceedings of 34th Annual Allerton Conference on Communication, Control and Computing
Conference Sponsor: Univ. Illinois at Urbana-Champaign
Conference Date: 2-4 Oct. 1996 Conference Location: Monticello, IL, USA
Language: English
Subfile: B

...Abstract: a high-rate user's data by a soft decoding rule from the outputs of **several** **decorrelators** sliding along the received **signal** sequence. The results show that it performs better than the HRD while

maintaining smaller demodulation **delay** and computational complexity than the LRD.
...Identifiers: demodulation **delay** ;

15/3,K/6 (Item 6 from file: 2)
DIALOG(R)File 2:INSPEC

5248625 INSPEC Abstract Number: A9610-8770J-022, B9606-7520E-007
Title: Separation of multiple signals **in hearing aids by output** decorrelation **and time-** delay **estimation**
Author(s): Bamford, P.; Canagarajah, N.
Author Affiliation: Centre for Commun. Res., Bristol Univ., UK
Conference Title: 1995 IEEE ASSP Workshop on Applications of Signal Processing to Audio and Acoustics (Cat. No.95TH8144) p.7-10
Publisher: IEEE, New York, NY, USA
Publication Date: 1995 Country of Publication: USA 284 pp.
ISBN: 0 7803 3064 1 Material Identity Number: XX95-02351
Conference Title: Proceedings of 1995 Workshop on Applications of Signal Processing to Audio and Acoustics
Conference Date: 15-18 Oct. 1995 Conference Location: New Paltz, NY, USA
Language: English
Subfile: A B

Title: Separation of multiple signals **in hearing aids by output** decorrelation **and time-** delay **estimation**
...Abstract: can be designed and the convergence behaviour can be greatly improved by using a time- **delay** estimation technique. The algorithm was implemented to successfully separate two signals and the results are...
...Descriptors: **delays** ;
...Identifiers: time- **delay** estimation...

15/3,K/7 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

0860450 NTIS Accession Number: AD-D007 756/0/XAB
Cascaded Digital Cancelers
(Patent)
Kretschmer, F. F. ; Lewis, B. L.
Department of the Navy, Washington, DC.
Corp. Source Codes: 001840000; 110050
Report No.: PAT-APPL-6-004 516; PATENT-4 222 051
Filed 18 Jan 79 patented 9 Sep 80 10p
Languages: English Document Type: Patent
Journal Announcement: GRAI8104
Supersedes PAT-APPL-6-004 516, AD-D006 004.
This Government-owned invention available for U.S. licensing and, possibly, for foreign licensing. Copy of patent available Commissioner of Patents, Washington, DC 20231 $0.50.
NTIS Prices: Not available NTIS

... of digital open-loop cancelers, each of which uses a batch window sampling technique, for **decorrelating** a main **input signal** from a

plurality of auxiliary **input signals** by using one or more iterations of cancellation. The main signal includes a desirable signal...
... first canceler. A second auxiliary signal is also fed to the second canceler but is **delayed** by the processing time of the first canceler. (Author)

15/3,K/8 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

03072921 E.I. Monthly No: EI9106065432
Title: Superresolution techniques for time-domain measurements with a network analyzer.
Author: Yamada, Hiroyoshi; Ohmiya, Manabu; Ogawa, Yasutaka; Itoh, Kiyohiko
Corporate Source: Dept of Electron Eng, Hokkaido Univ, Sapporo, Japan
Source: IEEE Transactions on Antennas and Propagation v 39 n 2 Feb 1991 p 177-183
Publication Year: 1991
CODEN: IETPAK ISSN: 0018-926X
Language: English

Abstract: Superresolution techniques for time **delay** estimation are proposed and applied to frequency-domain data measured with a network analyzer. A...
Identifiers: SUPERRESOLUTION TECHNIQUES; TIME **DELAY** ESTIMATION; **MULTIPLE SIGNAL** CLASSIFICATION (MUSIC) ALGORITHM; SPATIAL SMOOTHING; **DECORRELATION** PERFORMANCE

15/3,K/9 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

10167727 Genuine Article#: 492UH No. References: 26
Title: Source directivity, signal decorrelation , spectral modulation and analysis of spatio-temporal patterns of multiple explosions
Author(s): Der ZA (REPRINT) ; Baumgardt DR
Corporate Source: ENSCO Inc,5400 Pt Royal Rd/Springfield//VA/22151 (REPRINT); ENSCO Inc,Springfield//VA/22151
Journal: PURE AND APPLIED GEOPHYSICS, 2001, V158, N11 (NOV), P2059-2076
ISSN: 0033-4553 Publication date: 20011100
Publisher: BIRKHAUSER VERLAG AG, VIADUKSTRASSE 40-44, PO BOX 133, CH-4010 BASEL, SWITZERLAND
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

Title: Source directivity, signal decorrelation , spectral modulation and analysis of spatio-temporal patterns of multiple explosions
...Abstract: shot patterns and are explored via a model based on spatial waveform decorrelation and propagation **delay** (directivity) effects. The phenomenon of decreasing modulation with decreasing average phase velocities of the seismic...

15/3,K/10 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci

08243493 Genuine Article#: 262BQ No. References: 30
Title: Analysis of decorrelator-based receivers for multirate DS/CDMA communications
Author(s): Chen JX (REPRINT) ; Mitra U
Corporate Source: QUALCOMM INC,/SAN DIEGO//CA/92121 (REPRINT); OHIO STATE UNIV,DEPT ELECT ENGN/COLUMBUS//OH/43210
Journal: IEEE TRANSACTIONS ON VEHICULAR TECHNOLOGY, 1999, V48, N6 (NOV), P 1966-1983
ISSN: 0018-9545 Publication date: 19991100
Publisher: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC, 345 E 47TH ST, NEW YORK, NY 10017-2394
Language: English Document Type: ARTICLE (ABSTRACT AVAILABLE)

...Abstract: a high-rate user's data by a soft-decoding rule from the outputs of **several** **decorrelators** sliding along the received **signal** sequence. The results show that it performs better than the HRD while maintaining smaller demodulation **delay** and computational complexity than the LRD. To further exploit the characteristics of multirate systems, a...

...its asymptotic multiuser efficiency is analyzed. It is shown that this detector incurs little demodulation **delay** for high-rate users and provides better performance for low-rate users than that of...

15/3,K/11 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

16274421 PASCAL No.: 03-0437100
Performance analysis of O SUP 3 BPSK LDD for asynchronous CDMA systems in the presence of synchronization errors
WEN Jyh-Horng; WEN Chao-Kai; WU Hsien-Tsai
Institute of Electrical Engineering, National Chung Cheng University, Taiwan; Institute of Communication Engineering, National Tsing Hua University, 300 Hsinchu, Taiwan; Department of Electronic Engineering, Southern Taiwan University of Technology, Taiwan
Journal: IEEE transactions on vehicular technology, 2003, 52 (4) 958-969
Language: English

...orthogonal structure. This paper examines the effects of three classes of synchronization errors, including time- **delay** errors, carrier phase errors, and carrier frequency errors, on the performance of the O SUP...

English Descriptors: Mobile radiocommunication; Code division **multiple** access; Asynchronous transmission; **Signal** detection; **Decorrelation** ; Phase shift keying; Binary modulation; Error analysis; Synchronization; Performance evaluation; Direct sequence

French Descriptors: Radiocommunication service mobile; Acces **multiple** code; Transmission asynchrone; Detection **signal** ; **Decorrelation** ; Modulation deplacement phase; Modulation binaire; Calcul erreur; Synchronisation; Evaluation performance; Sequence directe

15/3,K/12 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

15307418 PASCAL No.: 01-0481525
Source directivity, signal decorrelation , **spectral modulation and analysis of spatio-temporal patterns of** multiple **explosions**
Monitoring the Comprehensive Nuclear-Test-Ban Treaty: Source Processes and Explosion Yield Estimation
DER Zoltan A; BAUMGARDTI Douglas R
. EKSTROEM Goeran, ed; DENNY Marvin, ed; MURPHY John R, ed
ENSCO Inc, 5400 Port Royal Rd, Springfield, VA 22151, United States
Harvard University, Department of Earth & Planetary Sciences, 20 Oxford Street, Cambridge, Massachusetts 02138, United States; Lawrence Livermore National Laboratory, P.O. Box 808, Livermore, California 94550-0808, United States; Maxwell Technologies, Inc. 11800 Sunrise Valley Dr., Suuite 1212, Reston, VA 20191, United States
Journal: Pure and Applied Geophysics, 2001, 158 (11) 2059-2076
Language: English

Source directivity, signal decorrelation , **spectral modulation and analysis of spatio-temporal patterns of** multiple **explosions**
... shot patterns and are explored via a model based on spatial waveform decorrelation and propagation **delay** (directivity) effects. The phenomenon of decreasing modulation with decreasing average phase velocities of the seismic...

15/3,K/13 (Item 3 from file: 144)
DIALOG(R)File 144:Pascal

14579822 PASCAL No.: 00-0247171
Signal separation using fractional sampling in multiuser communications
BRANDT PEARCE M
Univ of Virginia, Charlottesville VA, United States
Journal: IEEE Transactions on Communications, 2000, 48 (2) 242-251
Language: English

... a decorrelating filter that separates signals in a multiuser environment by relying on the relative **delays** to be sufficiently distinct. The input signal is fractionally sampled to allow for the differentiation of the user **delays** . Both zero-forcing and minimum mean-square-error versions of this filter are derived and...

...unknown digital signals by using the known received pulse shapes and the symbol rate. A **delay** -division **multiple** -access (DDMA) scheme based on this **signal decorrelator** is proposed that will allow **signals** to be transmitted without spreading the signal spectrum. It is shown that in a noisy...

... systems and is similar to other bandwidth efficient schemes. The performance of a code-division **multiple** -access (CDMA) system using this **signal decorrelator** is also given. The **decorrelator** can be used as a blind multiuser detector or as a preprocessor to enhance the...

```
File 348:EUROPEAN PATENTS 1978-2004/Sep W01
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040916,UT=20040909
         (c) 2004 WIPO/Univentio

Set     Items   Description
S1      11170   (ACOUSTIC?? OR ECHO?? OR REVERBER? OR FEEDBACK?? OR FEED()-
             BACK)(5N)(CANCEL???? OR CANCELLATION??? OR SUPRESS???? OR RED-
             UC????? OR ELIMINAT????)
S2         93   (DECORRELAT???? OR DE()CORRELA????)(5N)(MULTIPL?? OR SEVER-
             AL?? OR PLURALI??? OR MANY OR NUMEROUS?? OR PLURAL??)(5N)(SIG-
             NAL?? OR INPUT?? OR MICROPHONE? OR MIC)
S3        552   (ALL()PASS?? OR ALLPASS??)(3N)(FILTER??)
S4       1495   DELAY??(S)(S1 OR S2)
S5      13975   RANDOM??(2N)(VARIABL???) OR PROBABILIT?(3N)DISTRIBUT???? OR
             DENSIT??(3N)FUNCTION??? OR PDF
S6         80   AU=(ALI M? OR ALI, M?)
S7          0   S6 AND S1
S8          0   S6 AND S2
S9          9   S1 AND S2
S10         4   S9 AND (S3 OR S4)
S11         0   S9 AND S5
S12         5   S9 NOT S10
S13         5   S2 AND S5
S14         5   S13 AND (S2 OR S3)
S15         5   S14 NOT S10
S16         5   S14 NOT S9
```

10/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00857671
METHOD AND APPARATUS FOR REDUCTION **OF UNWANTED** FEEDBACK
VERFAHREN UND VORRICHTUNG ZUR REDUZIERUNG UNERWUNSCHTER RUCKKOPPLUNG
PROCEDE ET DISPOSITIF SERVANT A LIMITER UNE RETROACTION INDESIRABLE
PATENT ASSIGNEE:
BRITISH BROADCASTING CORPORATION, (215360), Broadcasting House, London W1A 1AA, (GB), (Proprietor designated states: all)
INVENTOR:
STOTT, Jonathan Highton, BBC Res. & Dev. Dept., Kingswood Warren, Tadworth, Surrey KT20 6NP, (GB)
WELLS, Nicholas Dominic, BBC Res. & Dev. Dept., Kingswood Warren, Tadworth, Surrey KT20 6NP, (GB)
LEGAL REPRESENTATIVE:
Abnett, Richard Charles et al (27531), REDDIE & GROSE 16 Theobalds Road, London WC1X 8PL, (GB)
PATENT (CC, No, Kind, Date): EP 858720 A1 980819 (Basic)
EP 858720 B1 020717
WO 9716942 970509
APPLICATION (CC, No, Date): EP 96935114 961030; WO 96GB2643 961030
PRIORITY (CC, No, Date): GB 9522204 951030
DESIGNATED STATES: BE; DE; ES; FR; GB; IT
INTERNATIONAL PATENT CLASS: H04R-003/02; H03H-021/00
NOTE:
No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200229	981
CLAIMS B	(German)	200229	914
CLAIMS B	(French)	200229	1069
SPEC B	(English)	200229	10027
Total word count - document A			0
Total word count - document B			12991
Total word count - documents A + B			12991

METHOD AND APPARATUS FOR REDUCTION **OF UNWANTED** FEEDBACK

...SPECIFICATION B1
This invention relates to a method of and apparatus for **reduction** of unwanted **feedback** in a system.
Unwanted feedback naturally follows from the use of amplifiers. It has the...
...the same frequency. While steps are taken, e.g. by using highly directional antennas, to **reduce** unwanted **feedback** , there is inevitably some unwanted feedback from the transmitting antenna back to the receiving antenna...

...system bandwidth, then the frequency response contains regular ripples.
To remove the effect of this **feedback** it needs to be **cancelled** out. This can be done using either of the circuits of Figure 4 or Figure...

...34, and the output applied to the input of the amplifier 38. such a circuit **cancels** out the unwanted **feedback** so long as C(f) = -B(f). This is known as neutralisation.

The pre-corrector 46 of the **feedback reduction** circuit of Figure 15 receives broadcast signals at RF frequency, and a down-converter 52... characteristic of the transversal filter 76, constituting the compensating path, can then be adjusted to **cancel** the effect of the **feedback** .

Using the wanted signal as the test signal itself gives improved signal-to-noise ratio...and combining the modified signal with the signal in the amplification path so as to **reduce** the effect of the **feedback** . The signal having an auto-correlation function which is substantially a delta function may be...

...CLAIMS signal with the signal in the amplification path prior to the delay so as to **reduce** the effect of the **feedback** .

2. A method according to claim 1, in which, after an initial period, the introducing...

...signal with the signal in the amplification path prior to the delay so as to **reduce** the effect of the **feedback** .

4. A method according to claim 3, in which the steps of correlating and modifying...

...variable-gain amplifier is initially at a relatively low value and is increased as the **feedback** is **reduced** by operation of the method.

11. A method according to claim 8, 9 or 10...

...delay, and including the steps of reducing the delay from an initial value as the **feedback** is **reduced** by operation of the method.

14. A method according to any preceding claim, including the...

...signal with the signal in the amplification path prior to the delay so as to **reduce** the effect of the **feedback** .

16. A pre-corrector for signals which are to be amplified by an amplifier in...signal with the signal in the amplification path prior to the delay so as to **reduce** the effect of the **feedback** .

17. A transceiver for receiving and re-transmitting radio-frequency signals, incorporating a pre-corrector...

...CLAIMS fonction delta ;

correlation du signal dans le trajet d'amplification avant le retard avec le **signal** de bruit afin de produire une **pluralite** de coefficients **de correlation** ;

modification d'un **signal** preleve dans le trajet d'amplification apres le retard et apres l'introduction du signal...

...fournir un signal modifie, la modification etant effectuee par un filtre transversal commande par ladite **pluralite** de coefficients **de correlation** ; et

combinaison du **signal** modifie avec le **signal** dans le trajet d'amplification avant le retard de maniere a reduire l'effet de...

...substantiellement une fonction delta ;

correlation dudit signal avant son retard dans le retard avec le **signal** apres son retard dans le retard afin de produire une **pluralite** de coefficients **de correlation** ;

modification d'un **signal** preleve dans le trajet d'amplification apres le retard afin de fournir un signal modifie, la modification etant effectuee par un filtre transversal commande par ladite **pluralite** de coefficients **de correlation** ; et

combinaison du **signal** modifie avec le **signal** dans le trajet d'amplification avant le retard de maniere a reduire l'effet de...

...72) pour correler le signal dans le trajet d'amplification avant le retard avec le **signal** de bruit afin de produire une **pluralite** de coefficients **de correlation** ;
un filtre transversal (76) recevant un **signal** preleve dans le trajet d'amplification apres le retard et apres le moyen d'introduction...un correlateur (72) pour correler ledit signal avant son retard dans le retard avec le **signal** apres son retard dans le retard afin de produire une **pluralite** de coefficients **de correlation** ;
un filtre transversal (76) recevant le **signal** de sortie du retard et commande par les coefficients de correlation afin de fournir un...

10/3,K/2 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00924211 **Image available**
SYSTEM AND METHOD FOR REDUCING MULTIPATH DISTORTION IN WIRELESS DISTANCE MEASUREMENT SYSTEMS
SYSTEME ET PROCEDE DE REDUCTION DES DISTORSIONS DUES A LA PROPAGATION PAR TRAJETS MULTIPLES DANS DES SYSTEMES DE MESURE DE DISTANCE SANS FIL
Patent Applicant/Assignee:
BLUESOFT INC, Suite 502, 401 City Avenue, Bala Cynwyd, PA 19004, US, US (Residence), US (Nationality)
Inventor(s):
BERLINER Shlomo, 2 Bergman Street, 76705 Rehovot, IL,
BENSKY Alan, 2 Bergman Street, 76705 Rehovot, IL,
AMESLEM Reuven, 2 Bergman Street, 76705 Rehovot, IL,
ZILBER Efraim, 2 Bergman Street, 76705 Rehovot, IL,
Legal Representative:
NELSON Thomas E (et al) (agent), Morgan, Lewis & Bockius LLP, 1111 Pennsylvania Avenue, NW, Washingotn, DC 20004, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200258290 A1 20020725 (WO 0258290)
Application: WO 2002US915 20020115 (PCT/WO US0200915)
Priority Application: US 2001759600 20010116
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ
EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR
LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI
SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE TR
(OA) BF BJ CF CG CI CM GA GN GQ GW ML MR NE SN TD TG
(AP) GH GM KE LS MW MZ SD SL SZ TZ UG ZM ZW
(EA) AM AZ BY KG KZ MD RU TJ TM
Publication Language: English
Filing Language: English
Fulltext Word Count: 12735

Fulltext Availability:
Detailed Description

Detailed Description

... provide an example of time-diversity reception in direct sequence spread spectrum communications. The receiver **de - correlates** the received **signal** by applying
2
several time- **delayed** versions of the known pseudo-random sequence used by the transmitter. The signal from the...

...signal through a tapped delay line. The tap take-off parameters are adaptively adjusted to **cancel** out **echoes** . As a further alternative, directional antennas may be used at one or both of the...

10/3,K/3 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00376199 **Image available**
METHOD AND APPARATUS FOR REDUCTION **OF UNWANTED** FEEDBACK
PROCEDE ET DISPOSITIF SERVANT A LIMITER UNE RETROACTION INDESIRABLE
Patent Applicant/Assignee:
BRITISH BROADCASTING CORPORATION,
STOTT Jonathan Highton,
WELLS Nicholas Dominic,
Inventor(s):
STOTT Jonathan Highton,
WELLS Nicholas Dominic,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9716942 A1 19970509
Application: WO 96GB2643 19961030 (PCT/WO GB9602643)
Priority Application: GB 9522204 19951030
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN KE LS MW SD SZ UG AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 11714

METHOD AND APPARATUS FOR REDUCTION **OF UNWANTED** FEEDBACK
Fulltext Availability:
Detailed Description
Claims

English Abstract
...combining (42) the modified signal with the signal in the amplification path so as to **reduce** the effect of the **feedback** . The signal having an auto-correlation function which is substantially a delta function may be...

French Abstract
...delta, a mettre en correlation (72) ledit signal avant qu'il soit retarde avec le **signal** apres qu'il soit retarde, afin de produire une **pluralite** de coefficients **de correlation** , a modifier le **signal** dans le trajet d'amplification, afin de produire un signal modifie, cette modification etant effectuee par un filtre transversal (76) commande par

a transversal filter (7G the signal in the amplification path so as to **reduce**
the effect of the **feedback** .
2 0 16. Apparatus according to claim 15, in which the
apparatus is incorporated in...

...in response to a remote control device which
operates the broadcast receiver.

18 Apparatus for **reducing** the **feedback** caused between
the output and input of an amplification path, comprising:
- 42
a **delay** (60) in the amplification path;
means (52,54) for passing through the amplification
path a...

...is
substantially a delta function;
a correlator (72) for correlating the said signal
before being **delayed** in the **delay** with the signal after
being **delayed** in the **delay** to produce a plurality of
correlation coefficients;
a transversal filter (76) receiving the output signal
from the **delay** and controlled by the correlation
coefficients to provide a modified signal; and
a combiner (42) for combining the modified signal
into the signal in the amplification path so as to **reduce**
the effect of the **feedback** .

19 Apparatus according to claim 18, in which the
apparatus is incorporated in a transceiver...

10/3,K/4 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00315987 **Image available**
METHOD AND APPARATUS FOR CANCELLING INTERFERENCE IN SIGNALS HAVING UNDERGONE MULTIPATH
PROCEDE ET APPAREIL D'ANNULATION DES INTERFERENCES DANS UN SIGNAL PROPAGE PAR TRAJETS MULTIPLES
Patent Applicant/Assignee:
MOTOROLA INC,
Inventor(s):
KOTZIN Michael D,
MEIDAN Reuven,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9534140 A1 19951214
Application: WO 95US4307 19950410 (PCT/WO US9504307)
Priority Application: US 94253895 19940603
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
BR CN JP KR MX RU AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 1767
Fulltext Availability:

Detailed Description

English Abstract
...provides correlation peaks of the various multipath echoes. The correlation peaks are characterized by time **delays** and respective amplitudes and phases of the various multipath **echoes** . By generating a **cancellation** signal (124) which utilizes the correlation peaks of each multipath echo, a signal (130) more...

French Abstract
...caracterisent par les retards, et les amplitude et phases respectives des differents echos des trajets **multiples** . La production d'un **signal** d'annulation (124) utilisant les pics **de** **correlation** des differents echos, permet d'obtenir un signal (130) plus representatif du signal (130) composite...

Detailed Description
... peaks are characterized by time
delays and respective amplitudes and phases of the various
multipath **echoes** . By generating a **cancellation** signal which
5 utilizes the correlation peaks of each multipath echo, a sig nal
more...
?

12/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00975563
Method and device for optimized processing of an interfering signal when recording sound
Verfahren und Vorrichtung zur optimierten Verarbeitung eines Storsignals wahrend einer Tonaufnahme
Procede et dispositif de traitement optimise d'un signal perturbateur lors d'une prise de son
PATENT ASSIGNEE:
FRANCE TELECOM, (1334140), 6, Place d'Alleray, 75015 Paris, (FR),
(Proprietor designated states: all)
INVENTOR:
Scalart, Pascal, Les Cinq Croix, 22300 Ploubezre, (FR)
Gilloire, Andre, 7, rue Yann Peron, 22300 Lannion, (FR)
LEGAL REPRESENTATIVE:
Frechede, Michel (44612), Cabinet Plasseraud 84, rue d'Amsterdam, F-75440 Paris Cedex 09, (FR)
PATENT (CC, No, Kind, Date): EP 884926 A1 981216 (Basic)
EP 884926 B1 030827
APPLICATION (CC, No, Date): EP 98401368 980608;
PRIORITY (CC, No, Date): FR 977106 970609
DESIGNATED STATES: DE; GB; IT
INTERNATIONAL PATENT CLASS: H04R-003/00
TRANSLATED ABSTRACT WORD COUNT: 65
ABSTRACT WORD COUNT: 126
NOTE:
Figure number on first page: 2A

LANGUAGE (Publication,Procedural,Application): French; French; French
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(French)	199851	1689
CLAIMS B	(English)	200335	1789
CLAIMS B	(German)	200335	1407
CLAIMS B	(French)	200335	1700
SPEC A	(French)	199851	9858
SPEC B	(French)	200335	9904
Total word count - document A			11549
Total word count - document B			14800
Total word count - documents A + B			26349

...SPECIFICATION publies par :
- B.AYAD, G.FAUCON et R.LE BOUQUIN JEANNES,
"Optimization of a Noise **reduction** preprocessing in an **acoustic echo** and noise controller", IEEE International Conference on Acoustics, Speech, and Signal Processing Conference, pp. 953...

...10, 1996 ;
- Y.GUELOU, A.BENAMAR et P.SCALART,

"Analysis of two structures for combined **acoustic echo cancellation** and noise **reduction** ", IEEE International Conference on **Acoustics** , Speech, and Signal Processing Conference, pp. 637-640, Atlanta, USA, May 7-10, 1996 ;
- R.MARTIN, P.VARY,

"Combined **acoustic echo** control and noise **reduction** for hands-free telephony - State iof the Art and perspectives", proceedings of the Eighth European...pourra utilement se reporter a l'article publie par :
. R.MARTIN et P.VARY

"Combined **acoustic echo cancellation** , dereverberation and noise **reduction** : a two microphone approach", Annales des telecommunications, Tome 49, n(degree) 7-8, pp. 429...ensemble des composantes constituant le signal perturbateur. En effet, on comprend en particulier que le **signal** perturbateur peut etre constitue d'une **pluralite** de composantes pourvu que la **decorrelation** soit suffisante entre le **signal** utile et le signal perturbateur, c'est-a-dire chacune des composantes constituant ce dernier...

...SPECIFICATION publies par :
- B.AYAD, G.FAUCON et R.LE BOUQUIN JEANNES, "Optimization of a Noise **reduction** preprocessing in an **acoustic echo** and noise controller", IEEE International Conference on Acoustics, Speech, and Signal Processing Conference, pp. 953...

...10, 1996 ;
- Y.GUELOU, A.BENAMAR et P.SCALART, "Analysis of two structures for combined **acoustic echo cancellation** and noise **reduction** ", IEEE International Conference on **Acoustics** , Speech, and Signal Processing Conference, pp. 637-640, Atlanta, USA, May 7-10, 1996 ;
- R.MARTIN, P.VARY, "Combined **acoustic echo** control and noise **reduction** for hands-free telephony - State of the Art and perspectives", proceedings of the Eighth European...pourra utilement se reporter a l'article publie par :
. R.MARTIN et P.VARY

"Combined **acoustic echo cancellation** , dereverberation and noise **reduction** : a two microphone approach",

Annales des telecommunications, Tome 49, n(degree) 7-8, pp. 429... ensemble des composantes constituant le signal perturbateur. En effet, on comprend en particulier que le **signal** perturbateur peut etre constitue d'une **pluralite** de composantes pourvu que la **decorrelation** soit suffisante entre le **signal** utile et le signal perturbateur, c'est-a-dire chacune des composantes constituant ce dernier...

12/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00853463
Transmission system of correlated signals
Ubertragungssystem fur in Wechselbeziehung stehende Signale
Systeme de transmission de signaux correles
PATENT ASSIGNEE:
PHILIPS ELECTRONICS N.V., (1489041), Groenewoudseweg 1, 5621 BA Eindhoven, (NL), (applicant designated states: DE;FR;GB)
INVENTOR:
Deville, Yannick, Societe Civile S.P.I.D., 156, Boulevard Haussmann, 75008 Paris, (FR)
Boissy, Jean-Christophe, Societe Civile S.P.I.D., 156, Boulevard Haussmann, 75008 Paris, (FR)

LEGAL REPRESENTATIVE:
  Landousy, Christian (44381), Societe Civile S.P.I.D. 156, Boulevard Haussmann, 75008 Paris, (FR)
PATENT (CC, No, Kind, Date): EP 786920 A1 970730 (Basic)
APPLICATION (CC, No, Date): EP 97200101 970116;
PRIORITY (CC, No, Date): FR 96752 960123
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: H04R-027/00; H04R-003/02; G10L-003/02;
TRANSLATED ABSTRACT WORD COUNT: 128
ABSTRACT WORD COUNT: 130

LANGUAGE (Publication,Procedural,Application): French; French; French
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(French)	9707W5	677
SPEC A	(French)	9707W5	3543
Total word count - document A			4220
Total word count - document B			0
Total word count - documents A + B			4220

...SPECIFICATION Une solution limitee a certains types de signaux est revelee dans le document intitule:
  "Stereophonic **acoustic echo cancellation** - An overview of the fundamental problem" par M.M. Sondhi, D.R. Morgan, J.L...

...CLAIMS 102b) pour adapter respectivement chaque moyen de filtrage adaptatif, les moyens d'adaptation effectuant la **decorrelation** , sur des decalages **multiples** , du **signal** d'estimation vis-a-vis de chaque signal electrique correle.
  8. Systeme selon une des...

12/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00763212
CDMA RECEIVING METHOD, AND RECEIVER
CDMA-EMPFANGSVERFAHREN UND EMPFANGER
METHODE DE RECEPTION ET RECEPTEUR CDMA
PATENT ASSIGNEE:
  Nokia Networks Oy, (1268802), Keilalahdentie 4, 02150 Espoo, (FI), (Proprietor designated states: all)
INVENTOR:
  LAAKSO, Timo, Vainamoisenkatu 25 A 13, FIN-00100 Helsinki, (FI)
  HOTTINEN, Ari, Kielotie 30-32 C 25, FIN-01300 Vantaa, (FI)
LEGAL REPRESENTATIVE:
  Dahlstrom, Karl Krister et al (82691), Oy Kolster Ab, Iso Roobertinkatu 23, P.O. Box 148, 00121 Helsinki, (FI)
PATENT (CC, No, Kind, Date): EP 740864 A1 961106 (Basic)
EP 740864 B1 011031
WO 9606487 960229
APPLICATION (CC, No, Date): EP 95929114 950823; WO 95FI451 950823
PRIORITY (CC, No, Date): FI 943906 940825
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04B-007/26; H04J-013/02
NOTE:
  No A-document published by EPO

LANGUAGE (Publication,Procedural,Application): English; English; Finnish
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200144	597
CLAIMS B	(German)	200144	525
CLAIMS B	(French)	200144	693
SPEC B	(English)	200144	3308
Total word count - document A			0
Total word count - document B			5123
Total word count - documents A + B			5123

...SPECIFICATION Data bit estimates obtained from the decorrelating detector can be improved e.g. by decision **feedback** interference **cancellation** , in which interference signals are regenerated and extracted on the basis of the bit estimates...

...CLAIMS AMRC est applique et un detecteur de decorrelation est utilise pour la detection d'un **signal** recu,

caracterise en ce que, dans le detecteur de **decorrelation** , l'effet du canal a trajets **multiples** sur un **signal** recu est d'abord egalise par un egaliseur,
le signal egalise est applique a des...

...de sortie des filtres adaptes est ensuite achemine vers des moyens de multiplication, ou le **signal** est **multiplie** par la matrice inverse de la matrice **de correlation** croisee des codes d'etalement utilises.
2. Procede de reception selon la revendication 1,

caracterise...

12/3,K/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00283047
METHOD OF DETECTING OBJECT AND APPARATUS THEREFOR.
VERFAHREN ZUM NACHWEIS EINES GEGENSTANDES UND VORRICHTUNG DAZU.
PROCEDE ET APPAREIL DE DETECTION D'OBJETS.
PATENT ASSIGNEE:
Nippon Telegraph and Telephone Corporation, (686331), 1-6 Uchisaiwaicho 1-chome Chiyoda-ku, Tokyo 100, (JP), (applicant designated states: DE;FR;GB)
INVENTOR:
NAGASHIMA, Yuji, NTT-Ryo 114, 2-2416-1, Hanazono Tokorozawa-shi, Saitama-ken 359, (JP)
SUDO, Yoshikazu, NTT-Shataku 16-101 429-2, Kamifujisawa, Iruma-shi, Saitama-ken 358, (JP)
MASUDA, Junichi, 4-35-20-301, Sekimachikita Nerima-ku, Tokyo 177, (JP)
MATSUDAIRA, Yuzo, 1-1039-22, Tatsuno Higashiyamato-shi, Tokyo 189, (JP)
ARITA, Kishio, NTT-Shataku 1-102 Fujimidai, Kunitachi-shi, Tokyo 186, (JP)
NAGAI, Eiji, NTT-Shataku 244, 1832, Ichigao Midori-ku, Yokohama-shi Kanagawa-ken 227, (JP)
LEGAL REPRESENTATIVE:
Mitscherlich, Hans, Dipl.-Ing. (8501), , , ( )
PATENT (CC, No, Kind, Date): EP 288578 A1 881102 (Basic)

EP 288578 A1 900919
EP 288578 B1 930324
WO 8803276 880505
APPLICATION (CC, No, Date): EP 87907140 871030; WO 87JP838 871030
PRIORITY (CC, No, Date): JP 86256764 861030; JP 87254738 871012; JP 87272133 871028
DESIGNATED STATES: DE; FR; GB
INTERNATIONAL PATENT CLASS: G01V-003/12; G01S-013/04;
LANGUAGE (Publication,Procedural,Application): English; English; Japanese
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	EPBBF1	1666
CLAIMS B	(German)	EPBBF1	1506
CLAIMS B	(French)	EPBBF1	2167
SPEC B	(English)	EPBBF1	4615
Total word count - document A			0
Total word count - document B			9954
Total word count - documents A + B			9954

...SPECIFICATION convert the divided signal portion into a corresponding frequency region to obtain a spectral distribution, **eliminate** spurious **echo** wave from the observation signal with the use of the frequency region data (spectrum peak...

...in accordance with the present invention is characterized in that an object is detected by **eliminating** spurious **echo** waves from an observation signal, obtained as various superimposed echo waves from the underground object...DC component strength represented by I(sub(dc)), and half value width represented by W.

Elimination of a Spurious **Echo** Wave

For the divided signal portion of the observation signal the aforementioned processes are repeated...

...R(sub(dc)) < R(sub(dc2)) and W(sub 1) < W < W(sub 2) are **eliminated** as spurious **echo** waves through the utilization of the characteristics of Figs. 7 and 8.

Figs. 7 and...

...divided signal portions in Fig. 5. (Table omitted)

The signal processing (step S6) including the **elimination** of the spurious **echo** wave and extraction of the echo wave returned back from the underground piping is performed...ratio R(sub(dc))-See Equation (3)-and half value width W.

(d) Section 15a **eliminates** the spurious **echo** waves as set forth in section 1 in conjunction with the detection method. That is...

...piping. If, on the other hand, the aforementioned values lies outside the aforementioned range, the **echo** waves are **eliminated** as spurious **echo** waves.

(e) The echo wave extracted from observation signal, as well as the cross-sectional...

...echo waves returned back from the buried piping having a linear structure and the other **echo** waves can be **eliminated** .

Computing unit 15 comprises frequency analyzing section 15a and synthetic aperture processing section 15c as...

...CLAIMS width W; and

extracting only the echo wave returned from the object being detected, by **eliminating** as a spurious **echo** wave, divided signal portions having a value other than that of the spectral peak frequency...

...half value width W;

extracting only an echo wave returned back from the object by **eliminating** , as a spurious **echo** wave, divided signal portions having a value other than that of said spectral peak frequency...

...p)), DC component ratio R(sub(dc)) and half value width W;

extracting only an **echo** wave from said object by **eliminating** , as a spurious **echo** signal from the respective spectrum distribution parameter values, divided signal portions having a value other...

...p)).

7. The method according to one of claims 1, 2 or 4, characterized by **eliminating** as a spurious **echo** wave a divided signal portion having a value other than that of said spectrum peak...claim 9, characterized in that said detecting means includes a means for extracting only an **echo** wave from said object by **eliminating** as a spurious **echo** wave, divided signal portions having a value other than that of said spectral peak frequency...

...f(sub(p)), DC component ratio R(sub(dc)) and half value width W, for **eliminating** , as a spurious **echo** wave, divided signal portions having a value other than that of said spectral peak frequency...

...value width W and extracting only an echo wave returned back from said object by **eliminating** as a spurious **echo** wave, divided signal portions having a value other than that of said spectrum peak frequency...

...CLAIMS valeur W ;

- l'extraction uniquement d'un signal d'observation renvoye par l'objet par **elimination** , en tant que signal d' **echo** parasite, des valeurs de parametre de distribution spectrale une valeur autre que celle de ladite...

...pluralite de composantes de signaux d'observation qui sont utilisees comme donnees de sections transversales **multiples** .

- l'execution d'un calcul **de correlation** sur les donnees de sections transversales **multiples** correspondant au **signal** d'observation extrait et l'extraction uniquement d'un signal d'observation renvoye par un...

...valeur W ;

- l'extraction d'uniquement un signal d'observation en provenance dudit objet par **elimination** , en tant que signal d' **echo** parasite, a des valeurs de parametre de distribution spectrale respectives d'un signal d'observation...valeurs de mi-largeur W, ledit signal d'observation comprenant une pluralite de composantes de **signal** d'observation qui sont utilisees comme donnees de sections transversales **multiples** ;

- l'execution d'un calcul **de correlation** sur les donnees de sections transversales **multiples** correspondant audit **signal**

d'observation extrait et l'extraction d'uniquement un signal d'observation renvoye par l...

...7. Procede selon l'une quelconque des revendications 1, 2 ou 4, caracterise par l' **elimination** en tant que signal d' **echo** parasite d'un signal d'echo ayant une valeur autre que celle de ladite frequence...

...comprend un moyen pour extraire uniquement un signal d'observation en provenance dudit objet par **elimination** , en tant que signal d' **echo** parasite, d'un signal d'observation ayant une valeur autre que celle d'une frequence...observation renvoye par ledit objet, ledit signal d'observation comprenant une pluralite de composantes de **signal** d'observation qui sont utilisees comme donnees de sections transversales **multiples** ;
- un moyen (15b) pour executer un calcul **de correlation** sur lesdites donnees de sections transversales **multiples** correspondant au **signal** d'observation extrait et pour extraire uniquement un signal d'observation qui est renvoye par...

...de largeur a mi-valeur ; ledit signal d'observation comprenant une pluralite de composantes de **signal** d'observation qui sont utilisees comme donnees de sections transversales **multiples** ;
- un moyen (15b) pour effectuer un calcul **de correlation** sur des donnees de sections transversales **multiples** respectives correspondant au **signal** d'observation extrait et pour extraire uniquement le signal d'observation en provenance dudit objet...

12/3,K/5 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00231249
MULTI-CHANNEL SIGNAL SEPARATION
SEPARATION DE SIGNAUX MULTICANAUX
Patent Applicant/Assignee:
MASSACHUSETTS INSTITUTE OF TECHNOLOGY,
Inventor(s):
WEINSTEIN Ehud,
FEDER Meir,
OPPENHEIM Alan V,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9305503 A1 19930318
Application: WO 92US7355 19920826 (PCT/WO US9207355)
Priority Application: US 91917 19910828
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
JP AT BE CH DE DK ES FR GB GR IE IT LU MC NL SE
Publication Language: English
Fulltext Word Count: 7567

Fulltext Availability:
Detailed Description

Detailed Description
... 773,906 issued to Varnaka et al. used Widrow's

approach and assumptions in an **acoustic cancellation** structure.

The main drawback of Widrow's approach lies in the crucial assumption that the...H12' is known, then the other transfer component H21 can be estimated. The criterion of **decorrelated** reconstructed **signal** outputs can be used with **several** other assumptions. For example, the generating system transfer components H and 12 H21 can have...

16/3,K/1 **(Item 1 from file: 348)**
DIALOG(R)File 348:EUROPEAN PATENTS

00704384
RECEPTION METHOD AND CDMA RECEIVER
EMPFANGSVERFAHREN UND CDMA-EMPFANGER
PROCEDE DE RECEPTION ET RECEPTEUR AMDC
PATENT ASSIGNEE:
Nokia Corporation, (3988870), Keilalahdentie 4, 02150 Espoo, (FI),
(Proprietor designated states: all)
INVENTOR:
HOTTINEN, Ari, Koulukatu 33-35 B 4, FIN-90100 Oulu, (FI)
LEGAL REPRESENTATIVE:
Brockman, Pertti Erik et al (81861), Kolster Oy Ab, P.O. Box 148, Iso Roobertinkatu 23, 00121 Helsinki, (FI)
PATENT (CC, No, Kind, Date): EP 692164 A1 960117 (Basic)
EP 692164 B1 020508
WO 9514336 950526
APPLICATION (CC, No, Date): EP 95900150 941109; WO 94FI503 941109
PRIORITY (CC, No, Date): FI 934966 931110
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04B-007/26; H04B-001/69; H04J-013/00
NOTE:
No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; Finnish
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200219	675
CLAIMS B	(German)	200219	614
CLAIMS B	(French)	200219	707
SPEC B	(English)	200219	5689
Total word count - document A			0
Total word count - document B			7685
Total word count - documents A + B			7685

...SPECIFICATION respect to the desired signal. Accordingly, the aim is to detect a desired user's **signal** from among **several** interfering **signals** . In practice, spreading codes are not **decorrelatable** and other users' signals make the detection of the desired signal more difficult by distorting...Figure 1 shows an ideal undistorted signal pattern of two users, i.e. a point **density function** of received signals, where the peaks of the function are situated at crossed points. Each...

...a receiver at the output of spreading-code-matched filters. The peaks of the point **density function** have spread and moved due to the distortion. The received signal points have moved from...

16/3,K/2 **(Item 1 from file: 349)**
DIALOG(R)File 349:PCT FULLTEXT

01009753 **Image available**
BLIND SOURCE SEPARATION OF PULSE OXIMETRY SIGNALS
SEPARATION DE SOURCES EN AVEUGLE DE SIGNAUX D'OXIMETRIE PULSEE
Patent Applicant/Assignee:

NELLCOR PURITAN BENNETT INCORPORATED, 4280 Hacienda Drive, Pleasanton, CA 94588, US, US (Residence), US (Nationality)
Inventor(s):
STETSON Paul F, 19 Montell Street, Oakland, CA 94611, US,
Legal Representative:
KUSHA Babak (et al) (agent), Townsend and Townsend and Crew LLP, Two Embarcadero Center, Eighth Floor, San Francisco, CA 94111-3834, US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200339340 A2-A3 20030515 (WO 0339340)
Application: WO 2002US35223 20021031 (PCT/WO US02035223)
Priority Application: US 200133703 20011102
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
CA JP
(EP) AT BE BG CH CY CZ DE DK EE ES FI FR GB GR IE IT LU MC NL PT SE SK TR
Publication Language: English
Filing Language: English
Fulltext Word Count: 5367

Fulltext Availability:
Detailed Description
Claims

Detailed Description
... i.e.

M
p(s) = p(Sl'...) SM) pi(si)
where p(s) is the **probability distribution** function of s.

[291 As described above, in pulse oximetry, the mixture signals correspond with...the degree of signal-noise separation is statistical independence, as described above. However, since the **probability distributions** are not known, the challenge of an ICA algorithm becomes the measurement of statistical independence...

Claim
... and a sensor.
I 1

8 The method of claim I wherein said processing said **plurality** of **signals** further comprises **decorrelating** said **plurality** of **signals** by minimizing a cross-correlation of said **plurality** of **signals** , to obtain a **plurality** of **decorrelated signals** ; and non-nalizing said **plurality** of **decorrelated signals** to obtain a **plurality** of principal components.

9 The method of claim I wherein said processing said **plurality** of **signals** comprises **decorrelating** said **plurality** of **signals** by singular-value decomposition of said **plurality** of **signals** , to obtain a plurality of principal components.

10 The method of claim 1 wherein said processing said **plurality** of **signals** comprises **decorrelating** said **plurality** of **signals** by multiplying said **plurality** of **signals** by the inverse square root of the covariance matrix of said plurality of signals to...sensed and a sensor.

27 The pulse oximeter of claim 20 wherein said processing said **plurality** of **signals** comprises **decorrelating** said **plurality** of **signals** by minimizing a cross-correlation of said **plurality** of **signals** , to obtain a **plurality** of **decorrelated signals** ; and normalizing said **plurality** of **decorrelated signals** to obtain a **plurality** of principal components.

28 The pulse oximeter of claim 20 wherein said processing said **plurality** of **signals** comprises **decorrelating** said **plurality** of **signals** by singular-value decomposition of said **plurality** of **signals** , to obtain a plurality of principal components.

29 The pulse oximeter of claim 20 wherein said processing said **plurality** of **signals** comprises **decorrelating** said **plurality** of **signals** by multiplying said **plurality** of **signals** by the inverse square root of the covariance matrix of said plurality of signals to...

16/3,K/3 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00783543 **Image available**
METHOD AND SYSTEM FOR ON-LINE BLIND SOURCE SEPARATION
PROCEDE ET SYSTEME DE SEPARATION DE SOURCES AVEUGLES EN LIGNE
Patent Applicant/Assignee:
SARNOFF CORPORATION, 201 Washington Road, CN 5300, Princeton, NJ 08543-5300, US, US (Residence), US (Nationality)
Inventor(s):
PARRA Lucas Cristobal, 497 Cherry Valley, Princeton, NJ 08540, US,
SPENCE Clay Douglas, 136 Cranbury Road, Princeton Junction, NJ 08550, US,

Legal Representative:
NEY Andrew L (agent), Ratner & Prestia, 301 One Westlakes (Berwyn), P.O. Box 980, Valley Forge, PA 19482-0980 (et al), US,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200117109 A1 20010308 (WO 0117109)
Application: WO 2000US23918 20000901 (PCT/WO US0023918)
Priority Application: US 99151838 19990901; US 2000597105 20000620
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
CN JP KR
(EP) AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Filing Language: English
Fulltext Word Count: 7706

Fulltext Availability:
Detailed Description

Detailed Description
... 515-528, Nov. 997], or indirectly by making assumptions on the shape of the cumulative **density function** (cdjg of the signals [See, e.g., R. Lambert and A. Bell, "Blind Separation of...art are overcome by a

method and apparatus that performs blind source separation using convolutive **signal decorrelation** by simultaneously diagonalizing second order statistics at **multiple** time periods in the frequency domain.

More specifically, in a first embodiment, the invention accumulates... samples. The previous KNT samples are removed from memory.

IL Description Of An On-Line **Multiple Decorrelation** Embodiment
1 5 With the off-line **multiple decorrelation** method of the prior embodiment, an entire **signal** segment (of at least several seconds) is divided into different portions - K estimation periods - with...

...data as soon as it arrives, with no storage of the data. The on-line **multiple decorrelation** methodology described hereafter embodies the advantages of using temporally-separated **multiple decorrelations** , while avoiding the necessity for storage of the **input** data.

A. On-line **Multiple Decorrelation** Methodology
Like the **decorrelation** algorithm of the prior embodiment, the algorithm of this embodiment is a gradient descent algorithm...are then used to - 12 compute filter parameter updates, at step 204, according to the **decorrelation** algorithm of the invention. Note that the BSS enviromnent will include **multiple signal inputs** and **multiple signal** outputs, and the **decorrelation** algorithm of the invention provides a distinct filter between every input and every output. Accordingly...

...returns, at step 208, to the input step, with the inputting of the next windowed **signal** segment.

B. Derivation of On-line **Multiple Decorrelation** Algorithm
(1) Basic Algorithm
As discussed hereinabove, non-stationary source **signals** can be recovered by optimizing filter coefficients W such that the estimated sources g(t...signal source 526 that supplies the signal that is to be separated into its component **signals** and a computer system 508 that executes the **multiple decorrelation** routine 524 of the present invention. The source 526 may contain any source of convolved...

...signal processor 504 and coupled to the computer system 508. The CPU 514, executing the **multiple decorrelation** routine 524, separates the composite **signal** into its constituent **signal** components. From these constituent components, background noise can easily be removed. The constituent components without...

...computer text or computer commands. In this manner, the computer system 508 while executing the **multiple decorrelation** routine 524 is performing **signal** pre-processing or conditioning for the speech recognition processor 518.

Although various embodiments which incorporate...

16/3,K/4 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00412506 **Image available**
A DELAY ESTIMATION METHOD AND A RECEIVER
PROCEDE D'ESTIMATION D'UN RETARD ET RECEPTEUR
Patent Applicant/Assignee:
NOKIA MOBILE PHONES LTD,
LILLEBERG Jorma,
NIEMINEN Esko,
Inventor(s):
LILLEBERG Jorma,
NIEMINEN Esko,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9802967 A2 19980122
Application: WO 97FI446 19970711 (PCT/WO FI9700446)
Priority Application: FI 962845 19960712
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)
AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH HU IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW GH KE LS MW SD SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 6081

Fulltext Availability:
Detailed Description

Detailed Description
... receivers are not effective, however. More effective known methods include multiuser detectors, e.g. a **decorrelating** detector that eliminates **multiple** access interference from the received **signal** by multiplying it with the crosscorrelation matrix of the spreading codes used. A decorrelating detector...x axis with the sampling accuracy. The value g obtains its minimum when the signal **density function** obtains its pathspecific maximum value.

Figure 4 shows the vector z minimizing the least square...

16/3,K/5 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2004 WIPO/Univentio. All rts. reserv.

00296185 **Image available**
RECEPTION METHOD AND CDMA RECEIVER
PROCEDE DE RECEPTION ET RECEPTEUR AMDC
Patent Applicant/Assignee:
NOKIA TELECOMMUNICATIONS OY,
HOTTINEN Ari,
Inventor(s):
HOTTINEN Ari,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9514336 A1 19950526
Application: WO 94FI503 19941109 (PCT/WO FI9400503)
Priority Application: FI 934966 19931110
Designated States:
(Protection type is "patent" unless otherwise stated - for applications prior to 2004)

AU CN DE GB JP NO US AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 7249

Fulltext Availability:
Detailed Description

Detailed Description
... signal.

Accordingly, the aim is to detect a desired user's sig
nal from among **several** interfering **signals** . In practice,,
spreading codes are not **decorrelatable** and other users'
signals make the detection of the desired signal more
dif f icult...Figure 1 shows an ideal
undistorted signal pattern of two users, i.e. a point
density function of received signals, where the peaks
of the function are situated at crossed points, Each...a receiver at the
output of spreading
code-matched filters. The peaks of the point **density**
function have spread and moved due to the distortion.

The received signal points have moved from...
?

```
File 344:Chinese Patents Abs Aug 1985-2004/May
         (c) 2004 European Patent Office
File 347:JAPIO Nov 1976-2004/May(Updated 040903)
         (c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200459
         (c) 2004  Thomson Derwent

Set     Items   Description
S1      14212   (ACOUSTIC?? OR ECHO?? OR REVERBER? OR FEEDBACK?? OR FEED()-
             BACK)(5N)(CANCEL???? OR CANCELLATION??? OR SUPPRESS?? OR REDU-
             C????? OR ELIMINAT????)
S2         15   (DECORRELAT???? OR DE()CORRELA????)(5N)(MULTIPL?? OR SEVER-
             AL?? OR PLURALI??? OR MANY OR NUMEROUS?? OR PLURAL??)(5N)(SIG-
             NAL?? OR INPUT?? OR MICROPHONE? OR MIC)
S3        359   (ALL()PASS?? OR ALLPASS??)(3N)(FILTER??)
S4     253058   DELAY??
S5       4676   RANDOM??(2N)(VARIABL???) OR PROBABILIT?(3N)DISTRIBUT???? OR
             DENSIT??(3N)FUNCTION??? OR PDF
S6        149   AU=(ALI M? OR ALI, M?)
S7          0   S1 AND S2
S8          4   S2 AND (S3 OR S4)
S9          0   S8 AND S6
S10         0   S2 AND S6
S11       139   (DECORRELAT???? OR DE()CORRELA????)(5N)(SIGNAL?? OR INPUT??
             OR MICROPHONE? OR MIC)
S12         4   S11 AND S1
S13         3   S12 NOT S4
S14         0   S12 AND S5
S15        40   S11 AND (S3 OR S4)
S16         0   S15 AND S5
S17         2   S6 AND S1
S18         0   S6 AND S2
```

8/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013302575 **Image available**
WPI Acc No: 2000-474510/200041
Related WPI Acc No: 2000-571124
XRPX Acc No: N00-353921
Signal **blockage prevention for digital mobile communication, involves delaying transmission of** multiple **digital version of source** signal **to** decorrelate signal **propagation effects during transmission**
Patent Assignee: TRW INC (THOP)
Inventor: JENKIN K R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6064658	A	20000516	US 96665143	A	19960614	200041	B
			US 9874264	A	19980507		

Priority Applications (No Type Date): US 96665143 A 19960614; US 9874264 A 19980507
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6064658	A		26	H04B-007/00	Div ex application US 96665143

Signal **blockage prevention for digital mobile communication, involves delaying transmission of** multiple **digital version of source** signal **to** decorrelate signal **propagation effects during transmission**
...Title Terms: **DELAY** ;

8/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

010230581 **Image available**
WPI Acc No: 1995-131838/199518
XRPX Acc No: N95-103684
Multichannel supply system for four channel headphones - in which selective circuit differentiates applied input signal with regard to two channel or multichannel content
Patent Assignee: KOENIG F (KOEN-I)
Inventor: KOENIG F
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
DE 4332504	A1	19950330	DE 4332504	A	19930926	199518	B

Priority Applications (No Type Date): DE 4332504 A 19930926
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
DE 4332504	A1		6	H04R-005/033	

...Abstract (Basic): non-mixed audio signal output. Independently of a two or multi-channel content of the **input** audio **signals** , the **signals** are **de - correlated** for each stereo channel variable, by different **multiple delays** (7) w.r.t. the REAR space tone signal pair...

8/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

008631291 **Image available**
WPI Acc No: 1991-135321/199119
XRPX Acc No: N91-103961
Diversity in radio communications link - de - correlating signals transmitted along paths, summing signals received over several paths and extracting original information
Patent Assignee: RACAL RES LTD (RACA)
Inventor: GARDNER B R
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2237706	A	19910508	GB 8924911	A	19891103	199119	B

Priority Applications (No Type Date): GB 8924911 A 19891103

... de - correlating signals **transmitted along paths, summing** signals **received over** several **paths and extracting original information**

...Abstract (Basic): transmit the same signal to a mobile station (12) the signal via antenna (22) being **delayed** by a time **delay** unit (24) to ensure de-correlation between the transmitted signals. It is unlikely that multi...

...two antennas of the base station. The signals receives are de-correlated by a time **delay** (38) connected to one of these antennas and summed (36) and passed to an equaliser...

8/3,K/4 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX

002120016
WPI Acc No: 1979-D9942B/197918
Computer engineering in radar digital transversal filter - with input signal fed to first delay **circuit, first subtractor and first multiplier**
Patent Assignee: MOSC COMMUNIC INST (MOCO-R)
Inventor: KUZ'KIN V S; LASKEEV S E
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
SU 612248	A	19780525				197918	B

Priority Applications (No Type Date): SU 2408856 A 19761001

... **with input signal fed to first** delay **circuit, first subtractor and first multiplier**

...Abstract (Basic): The number of subtractors is usually much less than the number of **delay** circuits because of **decorrelation** of the **signals** in periodised subtractions. As **many** are desirable as reduce the number of digits sufficiently. After the signal has been fed from the first **delay** circuit to the first subtractor and so on,

coefficients are applied by the multipliers for...
...Title Terms: **DELAY** ;

13/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013882794 **Image available**
WPI Acc No: 2001-367007/200138
XRPX Acc No: N01-267803
Echo reducing **method for telephone configured to hands-free operation involves** decorrelating echo signal **by** decorrelator **to** reduce echo **contained in** echo **estimate signal**
Patent Assignee: TELEFONAKTIEBOLAGET ERICSSON L M (TELF)
Inventor: RASMUSSON J
Number of Countries: 092 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200074361	A1	20001207	WO 2000EP4665	A	20000523	200138	B
AU 200052155	A	20001218	AU 200052155	A	20000523	200138	

Priority Applications (No Type Date): US 99320468 A 19990527
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200074361	A1	E	28	H04M-009/08	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TZ UG ZW

AU 200052155	A		H04M-009/08	Based on patent WO 200074361

Echo reducing **method for telephone configured to hands-free operation involves** decorrelating echo signal **by** decorrelator **to** reduce echo **contained in** echo **estimate signal**

Abstract (Basic):
... error signal corresponding to the difference between the electrical audio signal and the echo estimate **signal** is produced. The **decorrelating** of an echo **signal** is performed by a **decorrelator** (503) to **reduce** an **echo** contained in the **echo** estimate
... An INDEPENDENT CLAIM is also included for an **echo reducing** apparatus...

...For **reducing echo** from electrical audio signal in telephone configured to hands-free operation...

...Enables residual **echo cancellation** without introducing distortion to a desired **signal** . Enables **decorrelation** of error **signal** only when magnitude of error signal is in a range defined by positive and negative...

...The figure shows the block diagram of a decorrelation type **echo reducing** apparatus...

13/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

010465243 **Image available**
WPI Acc No: 1995-366562/199547
XRPX Acc No: N95-271238
Signal amplifier system with echo cancelling **apparatus - includes circuit for** de - correlating signal **from** microphone **and** signal **propagated by loudspeaker**
Patent Assignee: KONINK PHILIPS ELECTRONICS NV (PHIG); PHILIPS ELECTRONICS NV (PHIG); PHILIPS NORDEN AB (PHIG); US PHILIPS CORP (PHIG)
Inventor: JANSE C P; TIMMERMANS P A A
Number of Countries: 019 Number of Patents: 009
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 9528034	A2	19951019	WO 95IB220	A	19950330	199547	B
EP 704118	A1	19960403	EP 95911488	A	19950330	199618	
			WO 95IB220	A	19950330		
WO 9528034	A3	19951130	WO 95IB220	A	19950330	199621	
US 5748751	A	19980505	US 95416277	A	19950404	199825	
			US 96728574	A	19961010		
			US 97822958	A	19970321		
JP 10508436	W	19980818	JP 95526209	A	19950330	199843	
			WO 95IB220	A	19950330		
EP 704118	B1	20030604	EP 95911488	A	19950330	200344	
			WO 95IB220	A	19950330		
DE 69530961	E	20030710	DE 630961	A	19950330	200353	
			EP 95911488	A	19950330		
			WO 95IB220	A	19950330		
JP 3447060	B2	20030916	JP 95526209	A	19950330	200361	
			WO 95IB220	A	19950330		
KR 378449	B	20030611	WO 95IB220	A	19950330	200370	
			KR 95705635	A	19951212		

Priority Applications (No Type Date): EP 94200984 A 19940412
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 9528034	A2	E	15	H03F-000/00	
Designated States (National): JP KR					
Designated States (Regional): AT BE CH DE DK ES FR GB GR IE IT LU MC NL PT SE					
EP 704118	A1	E	15	H03G-003/00	Based on patent WO 9528034
Designated States (Regional): DE FR GB					
WO 9528034	A3			H03F-000/00	
US 5748751	A		7	H04B-015/00	Cont of application US 95416277
					Cont of application US 96728574
JP 10508436	W		18	H04R-003/02	Based on patent WO 9528034
EP 704118	B1	E		H03G-003/00	Based on patent WO 9528034
Designated States (Regional): DE FR GB					
DE 69530961	E			H03G-003/00	Based on patent EP 704118
					Based on patent WO 9528034
JP 3447060	B2		8	H04R-003/02	Previous Publ. patent JP 10508436
					Based on patent WO 9528034
KR 378449	B			H03F-003/19	Previous Publ. patent KR 96703288
					Based on patent WO 9528034

Signal amplifier system with echo cancelling **apparatus...**

...includes circuit for de - correlating signal **from** microphone **and** signal **propagated by loudspeaker**

...Abstract (Basic): from an input signal from a pick-up (2). The signal processing system comprises an **echo canceller** (16) which includes an adaptive filter (12) for deriving a compensation signal from a signal...

...A **decorrelator** (6) derives the output **signal** from the difference signal and reduces the correlation between the input and output signals ...

...ADVANTAGE - Undesired effect of **feedback** path better **suppressed** .

13/3,K/3 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009679706 **Image available**
WPI Acc No: 1993-373260/199347
XRPX Acc No: N94-238421
Colour temp. or white balance control of colour video camera - processing colour signals through neural network, and converting output data of neural network to colour-correlating data NoAbstract
Patent Assignee: TOYO INK MFG CO (TOXW); USUI S (USUI-I)
Inventor: USUI S
Number of Countries: 002 Number of Patents: 003
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
JP 5276529	A	19931022	JP 91305940	A	19911121	199347	B
US 5351079	A	19940927	US 92977598	A	19921117	199438	
JP 2978615	B2	19991115	JP 91305940	A	19911121	199954	

Priority Applications (No Type Date): JP 91305940 A 19911121
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 5276529	A		15	H04N-009/73	
US 5351079	A		28	H04N-009/73	
JP 2978615	B2		15	H04N-009/73	Previous Publ. patent JP 5276529

...Abstract (Basic): The colour balance adjusting appts. includes a **decorrelator** for receiving first colour component **signals** which indicate a colour image obtained under an illuminant and which are correlated with one another and convert the first colour component signals into second colour component **signals** of reduced correlation. The **decorrelator** comprises a neural network which is formed of neuron units having **feedback** connections and is learned to **reduce** the correlation among the first colour component signals. A converter changes the second colour component **signal** output from the **decorrelator** into **signals** indicating a colour image having the same colour balance as a colour image obtained under...

17/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

014685807 **Image available**
WPI Acc No: 2002-506511/200254
XRPX Acc No: N02-400688
Multi-channel adaptive filter system for echo canceling **system, generates pre-filtering co-efficients in response to forward and backward filter parameters and corresponding errors**
Patent Assignee: TEXAS INSTR INC (TEXI)
Inventor: **ALI M**
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6381272	B1	20020430	US 9880188	A	19980324	200254	B
			US 99235891	A	19990122		

Priority Applications (No Type Date): US 9880188 P 19980324; US 99235891 A 19990122
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6381272	B1		27	H03H-007/30	Provisional application US 9880188

Multi-channel adaptive filter system for echo canceling **system, generates pre-filtering co-efficients in response to forward and backward filter parameters and...**
Inventor: **ALI M**

Abstract (Basic):
... An INDEPENDENT CLAIM is included for multi-channel **acoustic cancellation** system...

...Use in multi-channel **acoustic cancellation** system (claimed...

...The figure shows the diagram of the multi-channel adaptive filter system of the **echo canceling** system...

17/3,K/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013492626 **Image available**
WPI Acc No: 2000-664569/200064
XRPX Acc No: N00-492522
Adaptive filtering for acoustic echo cancellation **in speaker phone, by using error vector and Toeplitz auto correlation matrix inverse to find prefiltering vector to update coefficient and approximation vectors**
Patent Assignee: TEXAS INSTR INC (TEXI)
Inventor: **ALI M** ; LINEBARGER D; OH S S
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6137881	A	20001024	US 9738535	A	19970228	200064	B
			US 9832528	A	19980227		

Priority Applications (No Type Date): US 9738535 P 19970228; US 9832528 A

19980227
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6137881	A		9	H04M-001/00	Provisional application US 9738535

Adaptive filtering for acoustic echo cancellation **in speaker phone, by using error vector and Toeplitz auto correlation matrix inverse to find...**

Inventor: **ALI M** ...

Abstract (Basic):

... The figure shows the **echo cancellation** system in speaker phones...

File 9:Business & Industry(R) Jul/1994-2004/Sep 16
(c) 2004 The Gale Group
File 15:ABI/Inform(R) 1971-2004/Sep 16
(c) 2004 ProQuest Info&Learning
File 16:Gale Group PROMT(R) 1990-2004/Sep 17
(c) 2004 The Gale Group
File 20:Dialog Global Reporter 1997-2004/Sep 17
(c) 2004 The Dialog Corp.
File 47:Gale Group Magazine DB(TM) 1959-2004/Sep 17
(c) 2004 The Gale group
File 75:TGG Management Contents(R) 86-2004/Sep W1
(c) 2004 The Gale Group
File 80:TGG Aerospace/Def.Mkts(R) 1986-2004/Sep 17
(c) 2004 The Gale Group
File 88:Gale Group Business A.R.T.S. 1976-2004/Sep 16
(c) 2004 The Gale Group
File 98:General Sci Abs/Full-Text 1984-2004/Jul
(c) 2004 The HW Wilson Co.
File 112:UBM Industry News 1998-2004/Jan 27
(c) 2004 United Business Media
File 141:Readers Guide 1983-2004/Jul
(c) 2004 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2004/Sep 17
(c)2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
(c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2004/Sep 17
(c) 2004 The Gale Group
File 264:DIALOG Defense Newsletters 1989-2004/Sep 16
(c) 2004 The Dialog Corp.
File 484:Periodical Abs Plustext 1986-2004/Sep W1
(c) 2004 ProQuest
File 553:Wilson Bus. Abs. FullText 1982-2004/Jul
(c) 2004 The HW Wilson Co
File 570:Gale Group MARS(R) 1984-2004/Sep 17
(c) 2004 The Gale Group
File 608:KR/T Bus.News. 1992-2004/Sep 17
(c)2004 Knight Ridder/Tribune Bus News
File 620:EIU:Viewswire 2004/Sep 16
(c) 2004 Economist Intelligence Unit
File 613:PR Newswire 1999-2004/Sep 17
(c) 2004 PR Newswire Association Inc
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Sep 17
(c) 2004 The Gale Group
File 623:Business Week 1985-2004/Sep 16
(c) 2004 The McGraw-Hill Companies Inc
File 624:McGraw-Hill Publications 1985-2004/Sep 16
(c) 2004 McGraw-Hill Co. Inc
File 634:San Jose Mercury Jun 1985-2004/Sep 16
(c) 2004 San Jose Mercury News
File 635:Business Dateline(R) 1985-2004/Sep 16
(c) 2004 ProQuest Info&Learning
File 636:Gale Group Newsletter DB(TM) 1987-2004/Sep 17
(c) 2004 The Gale Group
File 647:CMP Computer Fulltext 1988-2004/Sep W1
(c) 2004 CMP Media, LLC
File 696:DIALOG Telecom. Newsletters 1995-2004/Sep 16
(c) 2004 The Dialog Corp.
File 674:Computer News Fulltext 1989-2004/Aug W4
(c) 2004 IDG Communications

```
File 810:Business Wire 1986-1999/Feb 28
         (c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30
         (c) 1999 PR Newswire Association Inc
File 587:Jane`s Defense&Aerospace 2004/Aug W4
         (c) 2004 Jane`s Information Group

Set     Items   Description
S1      26216   (ACOUSTIC?? OR ECHO?? OR REVERBER? OR FEEDBACK?? OR FEED()-
             BACK)(5N)(CANCEL???? OR CANCELLATION??? OR SUPRESS???? OR RED-
             UC????? OR ELIMINAT????)
S2         15   (DECORRELAT???? OR DE()CORRELA????)(5N)(MULTIPL?? OR SEVER-
             AL?? OR PLURALI??? OR MANY OR NUMEROUS?? OR PLURAL??)(5N)(SIG-
             NAL?? OR INPUT?? OR MICROPHONE? OR MIC)
S3        189   (ALL()PASS?? OR ALLPASS??)(3N)(FILTER??)
S4       1524   DELAY??(S)(S1 OR S2)
S5     182727   RANDOM??(2N)(VARIABL???) OR PROBABILIT?(3N)DISTRIBUT???? OR
              DENSIT??(3N)FUNCTION??? OR PDF
S6        435   AU=(ALI M? OR ALI, M?)
S7          0   S6 AND S1
S8          0   S6 AND S2
S9          0   S1 AND S2
S10      1521   S1 AND (S3 OR S4)
S11        13   S10 AND S5
S12         8   RD (unique items)
S13         0   S2 AND S5
S14        11   RD S2 (unique items)
S15         3   S14 AND (S3 OR S4)
```

12/3,K/1 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

10197297 Supplier Number: 90606203 (USE FORMAT 7 FOR FULLTEXT)
ManArray devours DSP code: BOPS applies SIMD, VLIW, and parallel processing techniques.(BOPS ManArray digital signal processor)
Levy, Markus
Microprocessor Report, v15, n10, p13(7)
Oct, 2001
Language: English Record Type: Fulltext
Document Type: Newsletter; Trade
Word Count: 5370

... faster than the C-optimized version.)
Overcoming Parallel Processing Aversion
The Autocorrelation algorithm, popular in **echo cancellation** and rake receivers, is more straightforward than many DSP algorithms (FFT included). Essentially, this algorithm is used to find the phase **delay** , or time lag, in two signals known to be the same but potentially having different...to that of conventional DSPs. In contrast, like many other VLIW DSPs, ManArray's code **density** in DSP **functions** is relatively poor--about 1.5 times that of typical conventional DSPs. Fortunately for ManArray...

12/3,K/2 (Item 2 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

08564994 Supplier Number: 73889650 (USE FORMAT 7 FOR FULLTEXT)
Lesson 154: Network Delay and Signal Propagation.(Technology Information)
Steinke, Steve
Network Magazine, p34
May 1, 2001
Language: English Record Type: Fulltext Abstract
Document Type: Magazine/Journal; Trade
Word Count: 1840

... in these hybrids creates echo signals, which reflect a speaker's voice back in a **delayed** form. People experience acoustic-psychological problems with **delayed** echoes, showing greater sensitivity as the **delay** increases. **Delays** of 10ms to 20ms are generally undetectable, but greater **delays** are more troublesome. U.S. phone companies have traditionally installed **echo - cancellation** circuitry every 500 miles (800km.) An 800km circuit running over optical fiber would introduce round-trip **delays** of about 15.6ms.
A commonly cited rule of thumb by voice-over-IP (VoIP... Charnkeitkong of Ransit University at http://vishnu.rsu.ac.th/instructor/pisit/NetHtmlSlide/03-Media. **pdf** .
Cisco Systems has a valuable Introduction to Voice and Telephone Technology at www.cisco.com...

...pres/401. **pdf** .
The October 1999 issue of Communication Systems Design features an article entitled " **Echo - cancellation** for Voice over IP" by John C. Gammel, which provides a more detailed account of...

12/3,K/3 (Item 3 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

06679671 Supplier Number: 55906339 (USE FORMAT 7 FOR FULLTEXT)
Switch Routers Show You the Way.
Michael, Bill
Computer Telephony, v7, n9, p82
Sept, 1999
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 5213

... 3355) makes the NX6400, a terabit switch router that performs high-speed IP-over-fiber **functions** . NX6400's port **density** is large -- up to 192 OC-3, 96 OC-12, 64 OC-48, and 16...PSX6000 policy server. Sonus pays close attention to voice quality, and has implemented G.168 **echo cancellation** , sophisticated voice coding, and low switch **delays** on the GSX9000, The switch can accommodate more than 8,000 VoIP calls on single...

12/3,K/4 (Item 4 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)
(c) 2004 The Gale Group. All rts. reserv.

05876794 Supplier Number: 53053936 (USE FORMAT 7 FOR FULLTEXT)
Fall Internet World 98 Exhibitor Profiles, A-L; Conference and Exposition to be held Oct. 5 through 9.
Business Wire, p0231
Oct 5, 1998
Language: English Record Type: Fulltext
Document Type: Newswire; Trade
Word Count: 5340

... NOW SHIPPING WITH ENHANCED CAPABILITIES
FOR WEB ENABLED PRODUCTION REPORTING
New On-demand paging and **PDF** support features improve document management, report display and report printing.
- INFOCUBE FOR INSURANCE AN ANALYTICAL...
allows users to view diverse document types in their original formats, and utilizes Adobe's **PDF** technology so that users can view the document as it was authored. The system also...

...consolidated logging and reporting functions, SS7 (Signaling System 7) protocol support, telco-grade hardware-based **echo - cancellation**
, a robust "QoS" (Quality of Service) and network management feature-set, and enhanced services support...

...designed to address IP telephony's most difficult technical issues, including full-duplex communications, scalability, **echo cancellation** , efficient audio compression, and low **delay** time (latency).

12/3,K/5 (Item 1 from file: 20)
DIALOG(R)File 20:Dialog Global Reporter

03004257
Fall Internet World 98 Exhibitor Profiles, A-L; Conference -4-
BUSINESS WIRE
October 02, 1998
JOURNAL CODE: WBWE LANGUAGE: English RECORD TYPE: FULLTEXT
WORD COUNT: 972

... allows users to view diverse document types in their original formats, and utilizes Adobe's **PDF** technology so that users can view the document as it was authored. The system also...consolidated logging and reporting functions, SS7 (Signaling System 7) protocol support, telco-grade hardware-based **echo - cancellation** , a robust "QoS" (Quality of Service) and network management feature-set, and enhanced services support...

... designed to address IP telephony's most difficult technical issues, including full-duplex communications, scalability, **echo cancellation** , efficient audio compression, and low **delay** time (latency). CONTACT: Business Wire Trade Show Services 800/237-8212 18:44 EDT OCTOBER...

12/3,K/6 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08124425 SUPPLIER NUMBER: 17389671 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Plastics technology: manufacturing handbook & buyers' guide 1995/96. (Buyers Guide)
Plastics Technology, v41, n8, pCOV(941)
August, 1995
DOCUMENT TYPE: Buyers Guide ISSN: 0032-1257 LANGUAGE: English
RECORD TYPE: Fulltext
WORD COUNT: 174436 LINE COUNT: 15187

... ready access to working components for cleaning and maintenance.
Also larger (2-in.-wide) two- **function** pelletizer. Both nip rolls have pneumatically adjustable pressure and are mechanically driven for pulling irregular...thermal homogenization and mixing.
Mix Pac filter is similar in construction, except melt must first **pass** through a tubular **filter** before passing through the mixing balls to the mold. (See ad p. 245.)
INDCO, INC...load cell are received by a computer, allowing precise blends by weight regardless of bulk- **density** variations. Process rate is accurately matched by constant monitoring of the mixing chamber's high... fully insulated.
INFRA-RED TECHNOLOGIES, INC.
Flameless infrared catalytic heaters fed by natural gas reportedly **reduce** energy costs up to 80% vs. electric heaters in thermoforming. Gas-Cat heaters operate at...

12/3,K/7 (Item 1 from file: 553)
DIALOG(R)File 553:Wilson Bus. Abs. FullText

04561873 H.W. WILSON RECORD NUMBER: BWBA01061873 (USE FORMAT 7 FOR FULLTEXT)
Do-it-yourself VOIP.
Audin, Gary
Business Communications Review v. 31 no7 (July 2001) p. 41-6
LANGUAGE: English
WORD COUNT: 4702

(USE FORMAT 7 FOR FULLTEXT)

...ABSTRACT: for voice quality are distortion of speech, loudness, background noise, voice loudness fading, crosstalk, network **echo** , **echo - canceller** performance, end-to-end **delay** , and silence suppression performance. To exchange information and experiences and to help lessen the difficulties...

TEXT:
... observe this conflict firsthand, try talking through a softphone when the PC is printing a **PDF** file.
If a gateway that is dedicated to VOIP is used, virtually no jitter will...are:
* Distortion of speech.
* Loudness (sound volume).
* Background noise.
* Voice loudness (volume) fading.
* Crosstalk.
* Network **echo** .
* **Echo - canceller** performance.
* End-to-end delay (phone to phone).
* Silence suppression performance.
A good tutorial on...

12/3,K/8 (Item 1 from file: 696)
DIALOG(R)File 696:DIALOG Telecom. Newsletters

00782132
Making Them Pay: Online Subscription Hints and Tips
MIN's New Media Report
December 3, 2001 VOL: 7 ISSUE: 24 DOCUMENT TYPE: NEWSLETTER
PUBLISHER: PHILLIPS BUSINESS INFORMATION
LANGUAGE: ENGLISH WORD COUNT: 2097 RECORD TYPE: FULLTEXT

TEXT:
...than you think.
When SmartMoney.com rolled out a two-tiered premium plan ($49 for **delayed** stock
quotes and $99 for real-time quotes), it only expected 20% of buyers to...

...not just deeper access but a set of searching and reporting tools, downloadable contact info, **PDF** formatted downloads, etc., that are tailored to the site's core sales and marketing audience...The most popular feature at IGN Insider is IGN Unplugged, the 80-100 page downloadable **PDF** version of the site which prints out in magazine format.
Snowball President Rick Boyce feels that portability is critical to users,

but
so is the fact that the **PDF** version is more concise, edited and filtered for
users than the Web site.
* Consider the...It reduces the churn dramatically. We started
to see a reduction in the number of **cancellations** and got a lot of
feedback ,"
says Assad. "That box will become a cash center for us as people start
paying...

15/3,K/1 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

04952043 Supplier Number: 47277465 (USE FORMAT 7 FOR FULLTEXT)
Statistical muxing optimizes bandwidth
Drury, Gordon
Electronic Engineering Times, p88
April 7, 1997
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 1248

... coders will be set to different parameter values, particularly bit rate, sufficient to cause the **delay** through each coder to be different. By definition, the compression system will remove any vestige...

...these streams are virtually random and decorrelated from each other over the short term. Optimum **multiplex** efficiency requires as much **decorrelation** among the **inputs** as possible.

15/3,K/2 (Item 1 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

05389122 SUPPLIER NUMBER: 60273614
Analysis of Decorrelator-Based Receivers for Multirate DS/CDMA Communications.(Brief Article)
Chen, Jiangxin; Mitra, Urbashi
IEEE Transactions on Vehicular Technology, 48, 6, 1966
Nov, 1999
DOCUMENT TYPE: Brief Article ISSN: 0018-9545 LANGUAGE: English
RECORD TYPE: Abstract

...AUTHOR ABSTRACT: a high-rate user's data by a soft-decoding rule from the outputs of **several** **decorrelators** sliding along the received **signal** sequence. The results show that it performs better than the HRD while maintaining smaller demodulation **delay** and computational complexity than the LRD. To further exploit the characteristics of multirate systems, a...

...its asymptotic multiuser efficiency is analyzed. It is shown that this detector incurs little demodulation **delay** for high-rate users and provides better performance for low-rate users than that of...

15/3,K/3 (Item 2 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

05363105 SUPPLIER NUMBER: 60589737
Signal Separation Using Fractional Sampling in Multiuser Communications.
Brandt-Pearce, Maite
IEEE Transactions on Communications, 48, 2, 242
Feb, 2000
ISSN: 0090-6778 LANGUAGE: English RECORD TYPE: Abstract

...AUTHOR ABSTRACT: a decorrelating filter that separates signals in a

multiuser environment by relying on the relative **delays** to be sufficiently distinct. The input signal is fractionally sampled to allow for the differentiation of the user **delays** . Both zero-forcing and minimum mean-square-error versions of this filter are derived and...

...unknown digital signals by using the known received pulse shapes and the symbol rate. A **delay** -division **multiple** -access (DDMA) scheme based on this **signal** **decorrelator** is proposed that will allow **signals** to be transmitted without spreading the signal spectrum. It is shown that in a noisy...

...systems and is similar to other bandwidth efficient schemes. The performance of a code-division **multiple** -access (CDMA) system using this **signal** **decorrelator** is also given. The **decorrelator** can be used as a blind multiuser detector or as a preprocessor to enhance the...
?